Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

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Introducing the Motherboard
Describes features of the motherboard
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Chapter 2
Installing the Motherboard
Describes installation of motherboard components
Go to ⇨ page 7

Chapter 3
Using BIOS
Provides information on using the BIOS Setup Utility
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Describes the motherboard software
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ATI Crossfire™ Technology Support
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NVIDIA® Hybrid SLI® Technology Support
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Marvell 88SE9128 SATA 6Gb/s RAID Controller BIOS Setup

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Memo

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Memo

Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing **P67H2-A2** motherboard. This motherboard is a high performance, enhanced-function motherboard designed to support the LGA1155 socket for 2nd Generation Intel® Core™ Family & Unlock processors to reach the optimum system performance. Combined with ECS unique **M.I.B III BIOS** interface, it makes a simple, fast and safe O.C. platform for high-end business or personal desktop market.

This motherboard is based on Intel® P67 Chipset for best desktop platform solution. P67 is a single-chip, highly integrated, high performance Hyper-Threading peripheral controller, unmatched by any other single-chip device controller. This motherboard supports up to 16 GB of system memory with dual channel DDR3 2133(OC)/1866(OC)/1600(OC)/1333/1066 SDRAM. It cooperates two of PCIe 16X Gen 2 graphic interface, that allows you install up to two graphic cards with multiple GPU running at PCIe Gen 2 speed. It provides two PCI rev 3.0 slots and one PCI Express x1 rev 2.0 slot for extending usage. It implements an EHCI compliant interface that provides fourteen USB 2.0 ports (eight USB ports and three USB 2.0 headers support additional six USB ports and one of Front USB 2.0 headers and USB 3.0 header provide with EZ charger technology, please reference chapter 2 part of Front Panel USB headers to check the detail information). This motherboard implements extra USB 3.0 host controllers which provide two USB3.0 ports at rear I/O in blue connector and one USB 3.0 header for two USB3.0 ports.

In addition to P67 chipset, this motherboard implements extra **Marvell 88SE9128B1 SATA 6Gb/s** chips, which provide **two eSATA 6Gb/s** ports and **four SATA 6Gb/s** ports totally, this motherboard delivers the highest data transfer rate to fulfill the most speed-demanding usage.

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including one PS/2 keyboard mouse combo connector, one CLR_CMOS button, two eSATA 6Gb/s ports, two Gigabit LAN ports, eight USB 2.0 ports, two USB 3.0 ports running at 5 Gb/s, one coaxial SPDIFO port and audio jacks for microphone, line-in and 8-channel line-out.

In addition, this motherboard comes with a power button and a reset button.

Feature

Processor

The motherboard uses an LGA1155 type of socket that carries the following features:

- Accommodates 2nd Generation Intel® Core™ Family & Unlock processors
- Supports “Hyper-Threading” technology CPU
- Supports two PCI Express x16 Gen2 slots

“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

Chipset

The Intel® P67 Chipset is a single-chip with proven reliability and performance.

- Supports one PCI Express x1 Gen2 slot
- Integrated four SATA 3.0 Gb/s ports and two SATA 6.0 Gb/s ports
- Fourteen USB 2.0 ports supported
- Supports Intel® High Definition Audio (Intel® HD Audio)
- Supports Intel® Rapid Storage Technology (Intel® RST)
- Integrated Clock Controller
- Low Pin Count (LPC) interface
- Serial Peripheral Interface (SPI) support
- Enhanced DMA Controller, interrupt controller, and timer functions
- Intel® High Definition Audio Controller

Etron EJ168 USB 3.0 Host Controller

- Two USB 3.0 ports and one USB 3.0 header for two USB 3.0 ports

Marvell 88SE9128B1 SATA RAID Processor

- Supports two SATA 6.0 Gb/s ports and two eSATA 6.0 Gb/s ports

ITE IT8893E PCI Express to PCI Bridge

- Supports two PCI 3.0 slots

Memory

- Supports DDR3 2133(OC)/1866(OC)/1600(OC)/1333/1066 DDR3 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 4 GB per DIMM with maximum memory size up to 16 GB

Audio:Realtek ALC892 HD Audio CODEC

- 7.1+2 Channel High Definition Audio Codec
- Meets Microsoft WLP3.x (Windows Logo Program) audio requirements
- DACs with 97dB SNR(A-weighting), ADCs with 90dB SNR (A-weighting)
- All ADCs and DACs supports 44.1k/48k/96k/192kHz sample rate
- 16/20/24-bit S/PDIF-OUT supports 32k/44.1k/48k/88.2k/96k/192kHz sample rate

- Content Protection for Full Rate loss-less DVD Audio, Blue-Ray DVD and HD-DVD audio content playback (with selected versions of Win-DVD/PowerDVD/TMT)
- Direct Sound 3D. compatible

Dual Giga LAN:Realtek RTL8111E Gigabit Ethernet Controller

- Integrated 10/100/1000 transceiver
- Wake-on-LAN and remote wake-up support

Expansion Options

The motherboard comes with the following expansion options:

- Two PCI Express x16 slots for Graphic Interface (x16) or (x8, x8)
- One PCI Express x1 slot
- Two 32-bit PCI v3.0 compliant slots
- four SATA 3.0 Gb/s connectors and four SATA 6.0 Gb/s connectors

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- One CLR_COMS button
- Two LAN ports
- Eight USB 2.0 ports
- Two USB 3.0 ports
- Two eSATA ports
- One coaxial SPDIFO port
- Audio jacks for microphone, line-in and 8-ch line-out

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50 ° C.

Specifications

CPU	• LGA1155 socket for 2nd Generation Intel® Core™ Family & Unlock processors • Supports “Hyper-Threading” technology CPU • DMI 5.0 GT/S
Chipset	• Intel® P67 Chipset
Memory	• Dual-channel DDR3 memory architecture • 4 x 240-pin DDR3 DIMM sockets support up to 16 GB • Supports 1333 DDR3 SDRAM
Expansion Slots	• 2 x PCI Express Gen2 x16 slots • 1 x PCI Express Gen2 x1 slot • 2 x PCI slots
Storage	• Supported by Intel® P67 Chipsets and Marvell 88SE9128B1 SATA RAID Processor • 4 x SATAII 3.0 Gb/s Host Controllers • 4 x SATAIII 6.0 Gb/s Host Controllers • 2 x eSATA 6.0 Gb/s
Audio	• Realtek ALC892 8-Ch HD audio CODEC • Compliant with HD audio specification
Giga LAN	• Dual Realteck 8111E Gigabit Lan
Rear Panel I/O	• 1 x PS/2 mouse combo connector • 1 x CLR CMOS button • 2 x USB3.0 ports(Compatible with 2 x USB2.0 ports) • 8 x USB2.0 ports • 2 x ESATA ports • 2 x RJ45 LAN connectors • 1 x Audio port with 5 audio jacks (Center/ Sub-woofer line Out, surround line out, Line in, microphone in, line out, and optical SPDIF out)
Internal I/O Connectors & Headers	• 1 x 24-pin ATX Power Supply connector, 8-pin 12V connector • 4 x Serial ATA 6Gb/s connectors • 4 x Serial ATA 3Gb/s connectors • 1 x USB3F headers (USB 3F supports EZ Charger) • 3 x USB2.0 headers support additional 6 USB ports (F_USB1 supports EZ Charger) • 1 x Front panel audio header • 1 x SPDIF out header • 1 x Panel header • 1 x ME UNLOCK header • 1 x Reset button • 1 x Power button • 1 x COM header • CPU_FAN/CASE_FAN/SYS_FAN/PWR_FAN connectors
System BIOS	• AMI BIOS with 32 Mb SPI Flash ROM • Supports ECS M.I.3 X Utility • Supports ACPI&DMI, Plug and Play, STR(S3)/STR(S4)/S1, Hardware monitor

	•	Audio, LAN, can be disabled in BIOS
	•	F7 hot key for boot up devices option
Form Factor	•	ATX Size, 305mm x 244mm

Motherboard Components

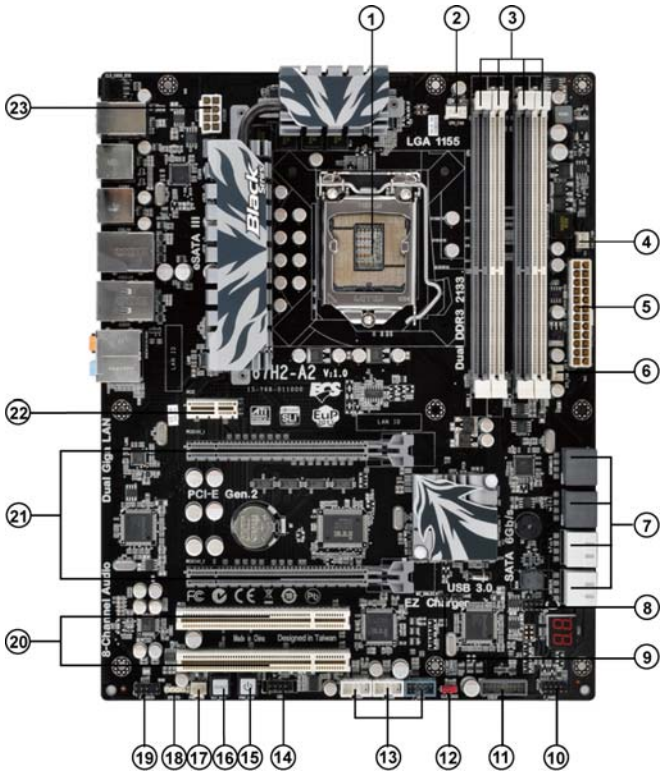


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	LGA1155 socket for 2nd Generation Intel® Core™ Family & Unlock processors
2. CPU_FAN	CPU cooling fan connector
3. DDR3_1~4	240-pin DDR3 SDRAM slots
4. CASE_FAN	Case cooling fan connector
5. ATX_POWER	Standard 24-pin ATX power connector
6. SYS_FAN	System cooling fan connector
7. SATA1~6	Serial ATA connectors (SATA1~2 support SATA 6Gb/s)
8. SPI_DEBUG	SPI debug header-for factory use only
9. ME_UNLOCK	ME unlock header-for factory use only
10. F_PANEL	Front panel switch/LED header
11. USB3F	Front panel USB 3.0 header (USB 3F supports EZ Charger)
12. CLR_CMOS	Clear CMOS jumper
13. F_USB1~3	Front panel USB header (F_USB1 supports EZ Charger)
14. COM	Onboard serial port header
15. PWR_BTN	Power on button
16. RST_BTN	Reset button
17. PWR_FAN	Power cooling fan connector
18. SPDIFO	SPDIF out header
19. F_AUDIO	Front panel audio header
20. PCI1~2	32-bit add-on card slot
21. PCIE16X1~2	PCI Express x16 slot for graphics interface
22. PCIE	PCI Express x1 slot
23. ATX12V	8-pin +12V power connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

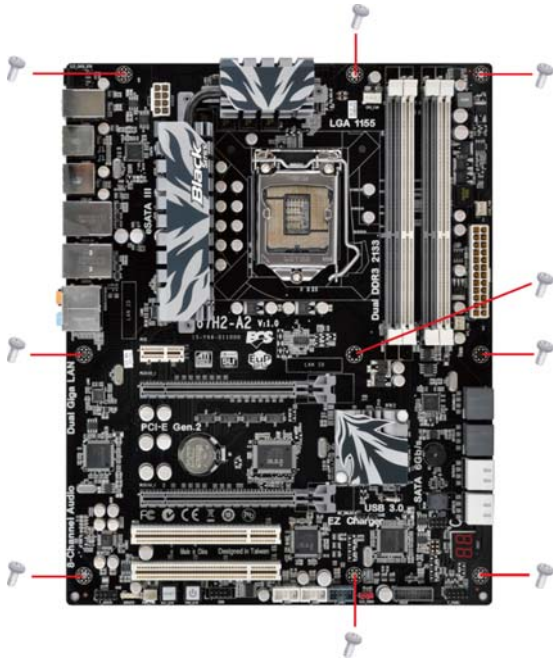
This motherboard carries an ATX form factor of 305 x 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning:

1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has an LGA1155 socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

Fail-Safe Procedures for Over-clocking

When end-users encounter failure after attempting over-clocking, please take the following steps to recover from it.

1. Shut down the computer.

2. Press and hold the “Page Up Key (PgUp)” of the keyboard, and then boot the PC up.

3. Two seconds after the PC boots up, release the “Page Up Key (PgUp)”.

4. The BIOS returns to the default setting by itself.

CPU Installation Procedure

The following illustration shows CPU installation components.

A. Opening of the Load Plate
- Put your thumb on the tail of the load plate and press the tail down.
- Rotate the load plate to fully open position.

B. Disengaging of the Load Lever
- Hold the hook of lever and pull it to the left side to clear retention tab.
- Rotate the load lever to fully open position.

C. Removing the Cap
- Be careful not to touch the contact at any time.

D. Inserting the Package
- Grasp the package. Ensure to grasp on the edge of the substrate.
- Make sure pin 1 indicator is on your bottom-left side.
- Aim at the socket and place the package carefully into the socket by purely vertical motion.

E. Closing the Load Plate
- Rotate the load plate onto the package IHS (Intergraded Heat Spreader).
- Engage the load lever while pressing down lightly onto the load plate.
- Secure the load lever with the hook under retention tab.

F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

G. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.

1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/ heatsink supplied. The form and size of fan/heatsink may also vary.

2. DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1155 socket.

Installing Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR3 DDR3 2133 (OC)/DDR3 1866 (OC)/1600 (OC)/1333/1066 SDRAM. The total memory capacity is 16 GB.

You must install at least one module in any of the four slots. Total memory capacity is 16 GB.

The four DDR3 memory sockets (DDR3_1, DDR3_2, DDR3_3 and DDR3_4) are divided into two channels and each channel has two memory sockets as following:

- Channel A: DDR3_1, DDR3_2
- Channel B: DDR3_3, DDR3_4

Recommend memory configuration

Mode	Sockets			
	DDR3_1	DDR3_2	DDR3_3	DDR3_4
1 DIMM	--	Populated	--	--
1 DIMM	--	--	--	Populated
2 DIMMs	--	Populated	--	Populated
3 DIMMs	Populated	Populated	--	Populated
3 DIMMs	--	Populated	Populated	Populated
4 DIMMs	Populated	Populated	Populated	Populated

1. For best performance and compatibility, we recommend that users give priority to the white DIMMs (DDR3_2/DDR3_4 when installing DIMMs.

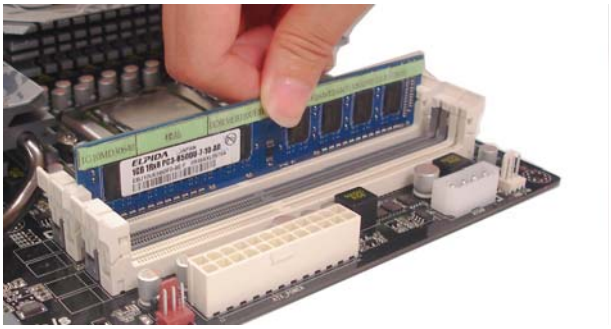
2. We suggest users not mix memory type. It is recommended to use the same brand and type memory on this motherboard.

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR3 SDRAM .
2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6. Install any remaining DIMM modules.

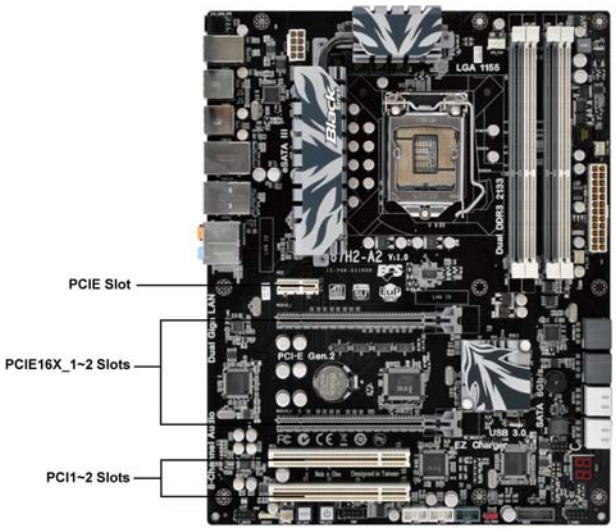


** For reference only*

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIE16X_1~2 Slots The PCI Express x16 slots are used to install external PCI Express graphics cards that are fully compliant to the PCI Express Base Specification revision 2.0. (one (x16) or two (x8, x8))

PCIE Slot The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 2.0.

PCI1~2 Slots This motherboard is equipped with two standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v3.0 compliant.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.

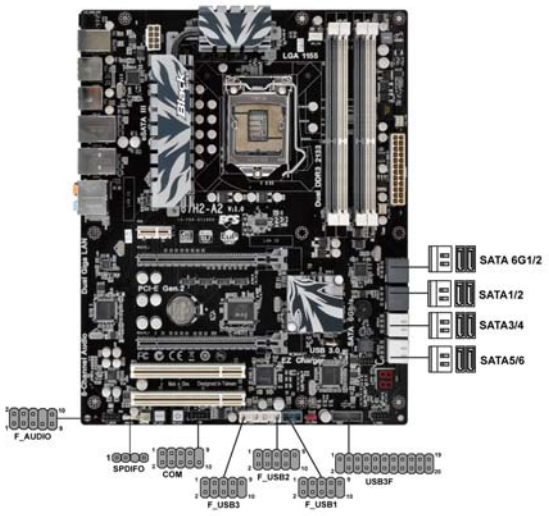
** For reference only*

1. For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

2. The onboard PCI interface does not support 64-bit SCSI cards.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SATA1/2, SATA 6G1/2: Serial ATA connectors

These connectors are used to support the Serial ATA devices for the highest data transfer rates (6.0 Gb/s), simpler disk drive cabling and easier PC assembly. It doubles the transfer rate of current SATA 3.0Gb/s interface.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

SATA3~6: Serial ATAII connectors

These connectors are used to support the Serial ATA 3Gb/s devices, simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

F_USB1~3 (USB 2.0): Front Panel USB 2.0 headers.

The motherboard has three USB 2.0 headers supporting eight USB 2.0 ports. Additionally, some computer cases have USB 2.0 ports at the front of the case. If you have this kind of case, use auxiliary USB 2.0 connector to connect the front-mounted ports to the motherboard.

Unlike F_USB2~3 in this mainboard, F_USB1 supports EZ Charger technology, provides about 1A current than general USB port in off mode for USB devices. It is useful and excellent, especially for the iPhone, iPad and iPod touch devices that need a large amount of current for faster recharging within less time.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	USB_FP_OC0	USBOC-

SPDIFO: SPDIF out header

This is an optional header that provides an SPDIFO (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name
1	SPDIFOUT
2	+5V
3	Key
4	GND

USB3F: Front Panel USB 3.0 headers.

This Motherboard implements one USB 3.0 header supporting 2 extra front USB 3.0 ports, which delivers 5Gb/s transfer rate. USB3F supports EZ Charger technology, provides about 1A current than general USB port in off mode for USB devices. It is useful and excellent, especially for the iPhone, iPad and iPod touch devices that need a large amount of current for faster recharging within less time.

It is suggested that USB Keyboard and USB Mouse connect to USB 2.0 ports rather than USB 3.0 ports. Wake up function from S1/S3 may not be supported by those devices that connect to USB 3.0 ports. USB devices connected to USB 3.0 ports may not be supported in DOS mode.

Pin	Signal Name	Function
1	Vbus	Front Panel USB Power
2	IntA_P1_SSRX-	USB3 ICC Port1 SuperSpeed Rx-
3	IntA_P2_SSRX+	USB3 ICC Port1 SuperSpeed Rx+
4	GND	GND
5	IntA_P1_SSTX-	USB3 ICC Port1 SuperSpeed Tx-
6	IntA_P1_SSTX+	USB3 ICC Port1 SuperSpeed Tx+
7	GND	GND
8	IntA_P1_D-	USB3 ICC Port1 D-
9	IntA_P1_D+	USB3 ICC Port1 D+
10	ID USBOC-	Over Current Protection
11	IntA_P2_D+	USB3 ICC Port2 D+
12	IntA_P2_D-	USB3 ICC Port2 D-
13	GND	GND
14	IntA_P2_SSTX+	USB3 ICC Port2 SuperSpeed Tx+
15	IntA_P2_SSTX-	USB3 ICC Port2 SuperSpeed Tx-
16	GND	GND
17	IntA_P2_SSRX+	USB3 ICC Port2 SuperSpeed Rx+
18	IntA_P2_SSRX-	USB3 ICC Port2 SuperSpeed Rx-
19	Vbus	Front Panel USB Power

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

ME_UNLOCK: ME Unlock Header

Pin 1-2	Function
Short	Unlock
Open	Lock

Installing SATA Hard Drives

This section describes how to install SATA devices such as a hard disk drive and a CD-ROM drive.

About SATA Connectors

Your motherboard features four SATA 3.0 Gb/s connectors and four SATA 6.0Gb/s connectors supporting a total of eight drives SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the SATA hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

SATA cable (optional)

SATA power cable (optional)

Refer to the illustration below for proper installation:

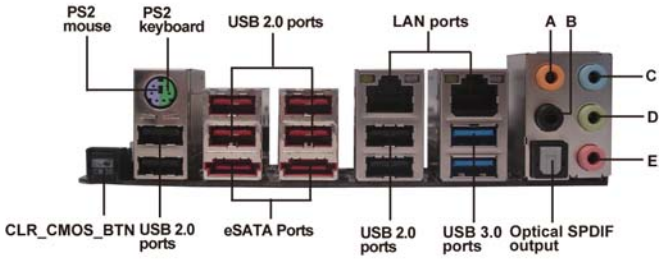
1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

** For reference only*

This motherboard supports the "Hot-Plug" function.

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS/2 Keyboard/Mouse Combo Port Connect the PS/2 Keyboard or PS/2 Mouse to the PS/2 combo port.

CLR_CMOS Button Use the CLR_CMOS button to clear CMOS.

Before clearing CMOS, make sure to turn off the power of the system.

eSATA 6 Gb/s ports Use these ports to connect to external SATA boxes or Serial ATA port multipliers.

LAN Ports Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

USB 2.0 Ports Use the USB 2.0 ports to connect USB 2.0 devices.

USB 3.0 Ports Use the USB 3.0 ports to connect USB 3.0 devices.

Optical SPDIF Output This jack connects to external optical digital audio output devices.

Audio Ports Use the audio jacks to connect audio devices. The C port is for stereo line-in signal, while the E port is for microphone in signal. This motherboard supports audio devices that correspond to the A, B, and D port respectively. In addition, both of the 2 ports, B, and D provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

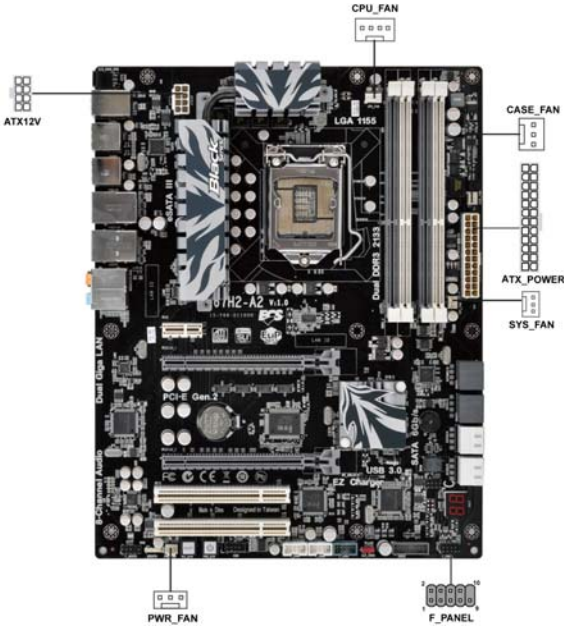
A: Center & Woofer	D: Front Out
B: Back Surround	E: Mic_in Rear
C: Line-in	-

The above port definition can be changed to audio input or audio output by changing the driver utility setting.

Connecting Case Components

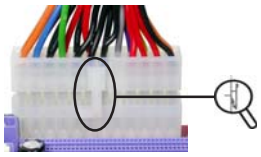
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1. Connect the CPU cooling fan cable to **CPU_FAN**.
2. Connect the system cooling fan connector to **SYS_FAN**.
3. Connect the power cooling fan connector to **PWR_FAN**.
4. Connect the case switches and indicator LEDs to the **PANEL**.
5. Connect the standard power supply connector to **ATX_POWER**.
6. Connect the auxiliary case power supply connector to **ATX12V**.
7. Connect the case cooling fan connector to **CASE_FAN**.



1. Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

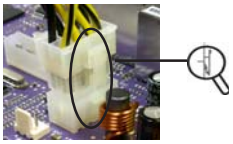


24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

2. Connecting 8 power cable

Users please note that the 8-pin and 4-pin power cables can both be connected to the ATX12V connector.



When installing 8-pin power cable, the latches of power cable and the ATX12V connector match perfectly.

8-pin power cable

CPU_FAN: CPU cooling FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	PWM

Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

SYS_FAN: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

ATX_ POWER: ATX 24-pin Power Connector

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

PWR_FAN: FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

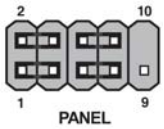
ATX12V: ATX 12V Power Connector

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

Make sure to connect a 4-pin ATX power cable to ATX4P; otherwise, the system will be unstable.

Panel Header

The panel header (PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED(+)	2	FP PWR/SLP	*MSG LED(+)
3	HD_LED_N	Hard disk LED(-)	4	FP PWR/SLP	*MSG LED(-)
5	RST_SW_N	Reset Switch(-)	6	PWR_SW_P	Power Switch(+)
7	RST_SW_P	Reset Switch(+)	8	PWR_SW_N	Power Switch(-)
9	RSVD	Reserved	10	Key	No pin

***** *MSG LED (dual color or single color)*

Users please note that the above picture is for reference only, you should determine the header pin definition by the actual key pin location.

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Memo

Chapter 3
Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

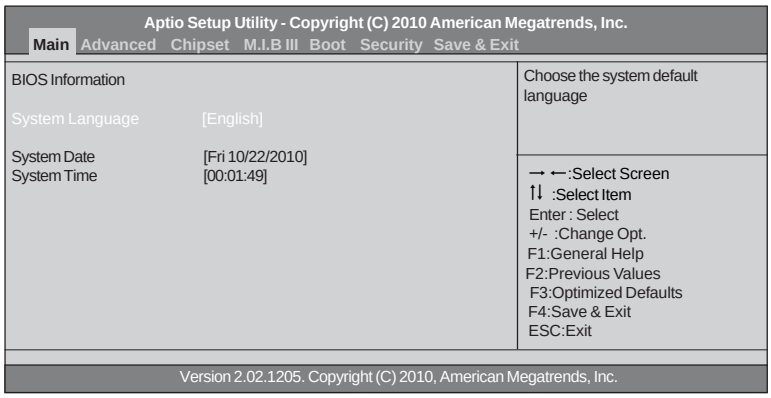
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

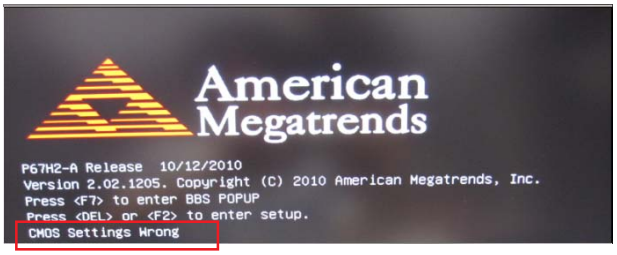
Press the delete key to access BIOS Setup Utility.



Resetting the Default CMOS Values

When powering on for the first time, the POST screen may show a "CMOS Settings Wrong" message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.


American Megatrends
P67H2-A Release 10/12/2010
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
Press <F7> to enter BBS POPUP
Press <DEL> or <F2> to enter setup.
CMOS Settings Wrong

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

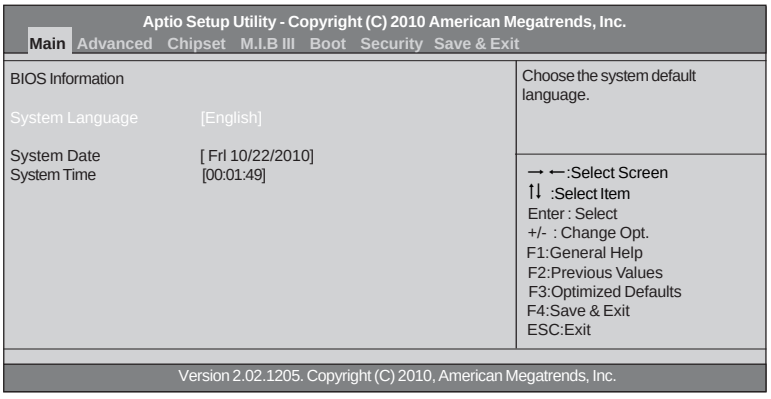
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Modifies the selected field's values
Enter	Select
F1	General Help
F2	Previous Value
F3	Optimized Defaults
F4	Save & Exit

For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
BIOS Information
System Language [English]
System Date [Frl 10/22/2010]
System Time [00:01:49]
Choose the system default language.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

System Language (English)

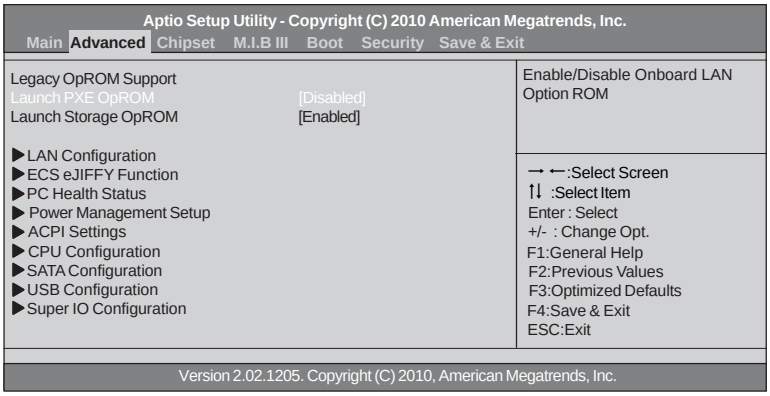
This item is used to set the language.

Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

Advaned Menu

The Advanced menu items allow you to change the settings for the CPU and other system.



Launch PXE OpROM

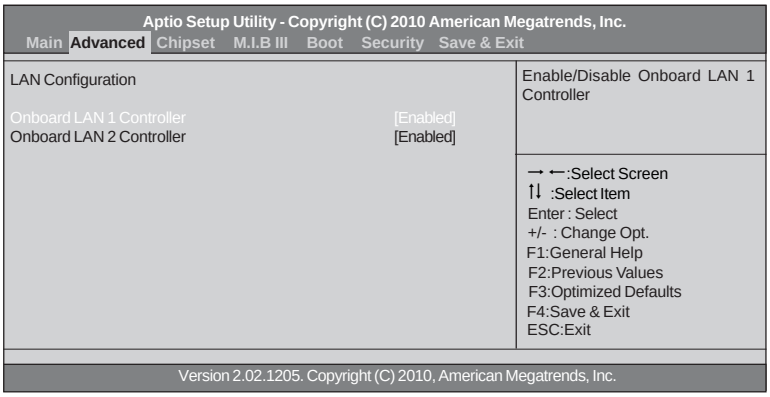
The item enables or disables launch PXE Option ROM.

Launch Storage OpROM

The item enables or disables launch Storage Option ROM.

LAN Configuration

The item in the menu shows the LAN-related information that the BIOS automatically detects.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
LAN Configuration
Onboard LAN 1 Controller [Enabled]
Onboard LAN 2 Controller [Enabled]
Enable/Disable Onboard LAN 1 Controller
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

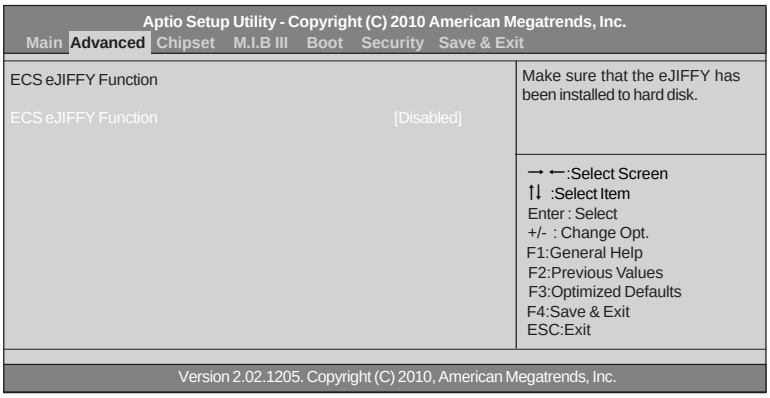
Onboard LAN1/2 Controller (Enabled)

Use this item to enable or disable the Onboard LAN.

Press <Esc> to return to the Advanced Menu page.

ECS eJIFFY Function

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
ECS eJIFFY Function
ECS eJIFFY Function [Disabled]
Make sure that the eJIFFY has been installed to hard disk.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

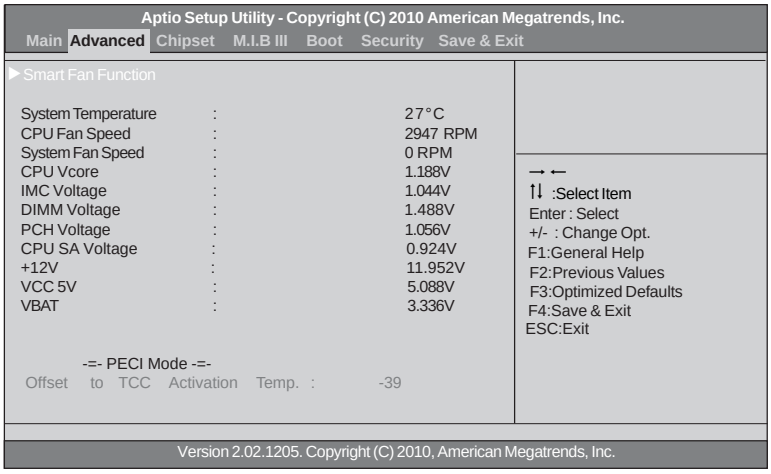
ECS eJIFFY Function (Disabled)

This item allows you to enable or disable ECS eJIFFY Function.

Press <Esc> to return to the Advanced Menu page.

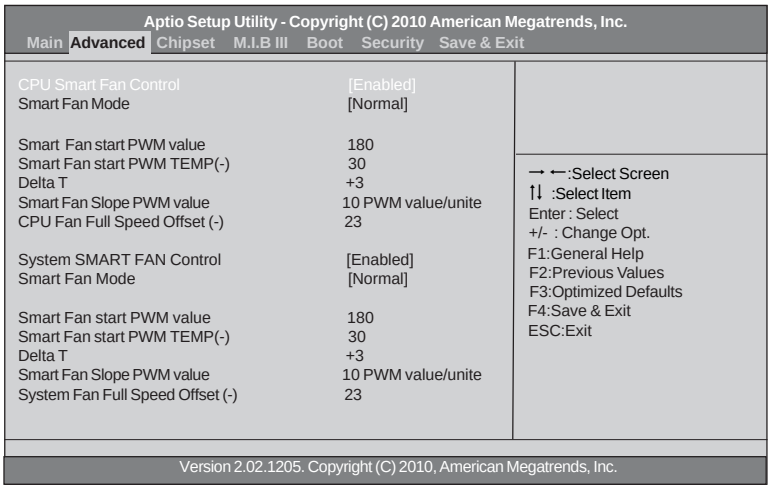
PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the paeameters for critical voltages, temperatures and fan speeds.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Smart Fan Function
System Temperature : 27°C
CPU Fan Speed : 2947 RPM
System Fan Speed : 0 RPM
CPU Vcore : 1.188V
IMC Voltage : 1.044V
DIMM Voltage : 1.488V
PCH Voltage : 1.056V
CPU SA Voltage : 0.924V
+12V : 11.952V
VCC 5V : 5.088V
VBAT : 3.336V
-=- PECI Mode -=-
Offset to TCC Activation Temp. : -39
→ ←
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

►Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
CPU Smart Fan Control [Enabled]
Smart Fan Mode [Normal]
Smart Fan start PWM value 180
Smart Fan start PWM TEMP(-) 30
Delta T +3
Smart Fan Slope PWM value 10 PWM value/unite
CPU Fan Full Speed Offset (-) 23
System SMART FAN Control [Enabled]
Smart Fan Mode [Normal]
Smart Fan start PWM value 180
Smart Fan start PWM TEMP(-) 30
Delta T +3
Smart Fan Slope PWM value 10 PWM value/unite
System Fan Full Speed Offset (-) 23
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

CPU Smart FAN Control (Enabled)

This item allows you to enable/disable the control of the CPU fan speed by changing the fan voltage.

Smart Fan Mode (Normal)

This item allows you to select the fan mode (Normal, Quiet, Silent, or Manual) for a better operation environment. If you choose Normal mode, the fan speed will be auto adjusted depending on the CPU temperature. If you choose Quite mode, the fan speed will be auto minimized for quiet environment. If you choose Silent mode, the fan speed will be auto restricted to make system more quietly. If you choose Manual mode, the fan speed will be adjust depending on users' parameters.

SMART Fan start PWM value (180)

This item is used to set the start PWM value of the smart fan.

SMART Fan start TEMP(-) (30)

This item is used to set the start temperature of the smart fan.

DeltaT (+3)

This item specifies the range that controls CPU temperature and keeps it from going so high or so low when smart fan works.

SMART Fan Slope PWM value (10 PWM value/unite)

This item is used to set the Slope Select PWM of the smart fan.

CPU Fan Full Speed Offset(-) (23)

This item is used to set the CPU fan full speed offset value.

System Fan Full Speed Offset(-) (23)

This item is used to set the system fan full speed offset value.

Press <Esc> to return to the PC Health Status page.

System Component Characteristics

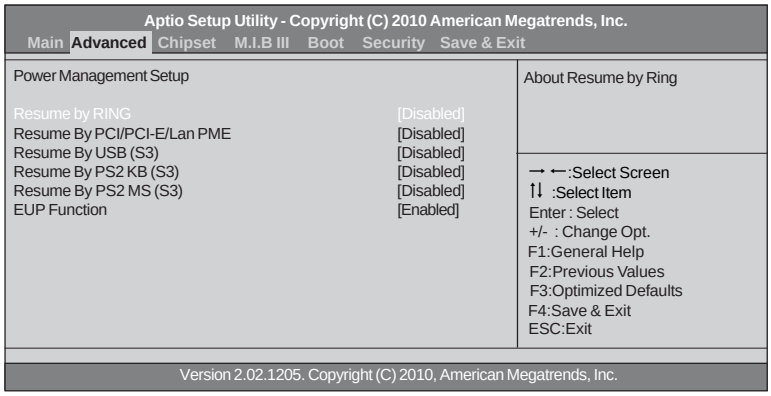
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,... etc.

- CPU Vcore
- IMC Voltage
- VDIMM
- PCH Voltage

Press <Esc> to return to the Advanced Menu page.

Power Management Setup

This page sets up some parameters for system power management operation.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Power Management Setup
Resume by RING [Disabled]
Resume By PCI/PCI-E/Lan PME [Disabled]
Resume By USB (S3) [Disabled]
Resume By PS2 KB (S3) [Disabled]
Resume By PS2 MS (S3) [Disabled]
EUP Function [Enabled]
About Resume by Ring
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Resume by Ring (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By USB (S3) (Disabled)

This item allows you to enable/disable the USB device wakeup function from S3 mode.

Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from power saving mode.

Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from power saving mode.

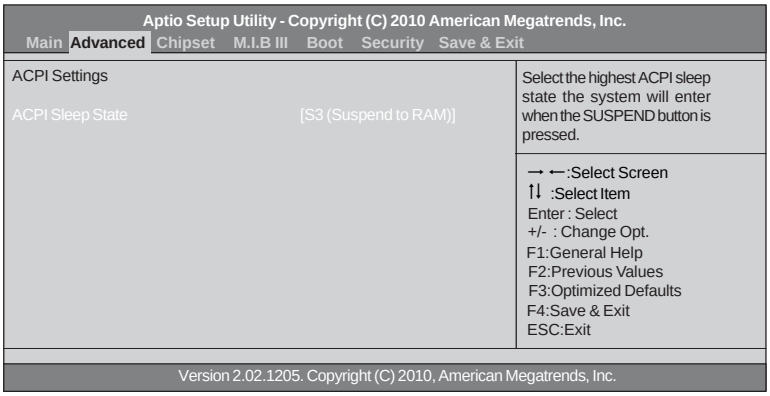
EUP Support (Enabled)

This item allows user to enable or disable EUP support.

Press <Esc> to return to the Advanced Menu page.

ACPI Configuration

The item in the menu shows the highest ACPI sleep state when the system enters suspend.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
ACPI Settings
ACPI Sleep State
[S3 (Suspend to RAM)]
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
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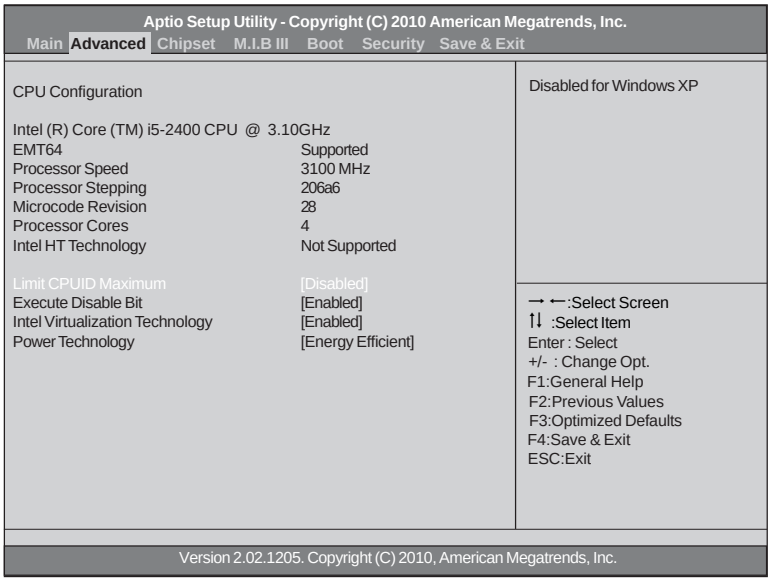
ACPI Sleep State (S3(Suspend to RAM))

This item allows user to enter the APCI S3 (Suspend toRAM) Sleep State(default).

Press <Esc> to return to the Advanced Menu page.

CPU Configuration

The item in the menu shows the CPU .


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
CPU Configuration
Intel (R) Core (TM) i5-2400 CPU @ 3.10GHz
EMT64 Supported
Processor Speed 3100 MHz
Processor Stepping 206a6
Microcode Revision 28
Processor Cores 4
Intel HT Technology Not Supported
Limit CPUID Maximum [Disabled]
Execute Disable Bit [Enabled]
Intel Virtualization Technology [Enabled]
Power Technology [Energy Efficient]
Disabled for Windows XP
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
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Inter(R) Core (TM) i5-2400K CPU @ 3.10 GHz

This is display-only field and diaplays the information of the CPU installed in your computer.

EMT64 (Supported)

This item shows the computer supports EMT64.

Processor Speed (3100MHz)

This item shows the processor speed.

Processor Stepping (206a6)

This item shows the information of processor stepping.

Microcode Revision (28)

This item shows the Microcode revision.

Processor Cores (4)

This item shows the information of the processor cores.

Intel HT Technology (Not Supported)

This item shows your computer does not support Intel HT technology.

Limit CPUID Maximum (Disabled)

Use this item to enable or disable the maximum CPUID value limit. When supports Prescott and LGA775 CPUs, enables this to prevent the system from “rebooting” when trying to install Windows NT 4.0.

Excute Disable Bit (Enabled)

This item allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Replacing older computers with Execute Disable Bit enabled systems can halt worm attacks, reducing the need for virus related repair.

Intel Virtualization Technology (Enabled)

When enabled, a VMM can utilize the additional hardware capabilities provided by Vandor Pool Technology.

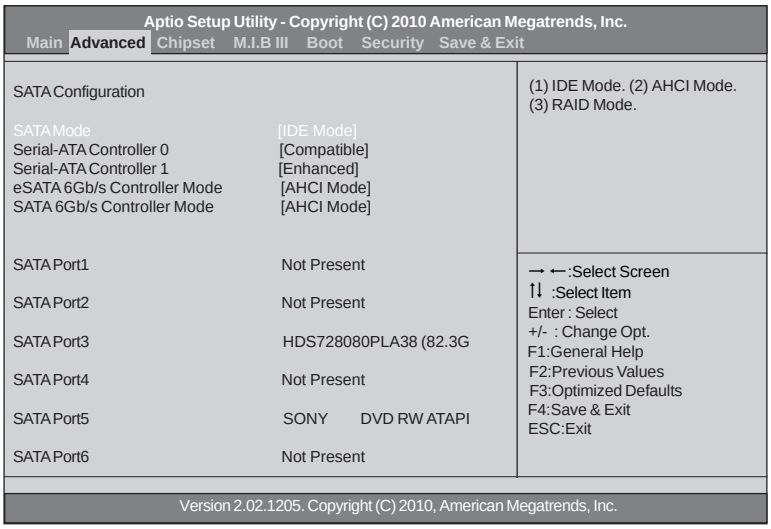
Power Technology (Energy Efficient)

This item enables or disables the power technology.

Press <Esc> to return to the Advanced Menu page.

SATA Configuration

Use this item to show the mode of serial SATA configuration options.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
SATA Configuration
SATA Mode [IDE Mode]
Serial-ATA Controller 0 [Compatible]
Serial-ATA Controller 1 [Enhanced]
eSATA 6Gb/s Controller Mode [AHCI Mode]
SATA 6Gb/s Controller Mode [AHCI Mode]
SATA Port1 Not Present
SATA Port2 Not Present
SATA Port3 HDS728080PLA38 (82.3G
SATA Port4 Not Present
SATA Port5 SONY DVD RW ATAPI
SATA Port6 Not Present
(1) IDE Mode. (2) AHCI Mode.
(3) RAID Mode.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
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SATA Mode (IDE Mode)

Use this item to select SATA mode.

Serial-ATA Controller 0/1 (Compatible/Enhanced)

Use this item to show the Serial-ATA cotroller options: Disabled, Compatible, Enhanced.

eSATA 6 Gb/s Controller Mode (AHCI Mode)

Use this item to select eSATA 6 Gb/s controller mode.

SATA 6 Gb/s Controller Mode (AHCI Mode)

Use this item to select SATA 6 Gb/s controller mode.

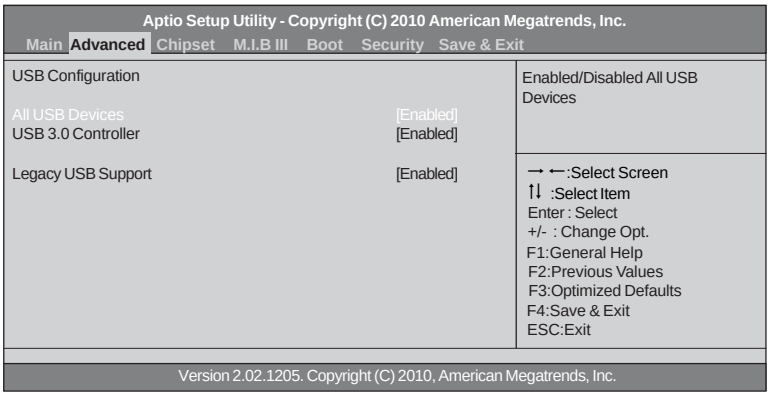
SATA Port 0~6

This motherboard supports six SATA channel and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.

Press <Esc> to return to the Advanced Menu page.

USB Configuration

Use this item to show the information of USB configuration.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
USB Configuration
All USB Devices [Enabled]
USB 3.0 Controller [Enabled]
Legacy USB Support [Enabled]
Enabled/Disabled All USB Devices
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

All USB Devices (Enabled)

Use this item to enable or disable all USB devices.

USB 3.0 Controller (Enabled)

Use this item to enable or disable USB 3.0 controller. We recommand users keep the default value. Disabling it might cause the USB devices not to work properly.

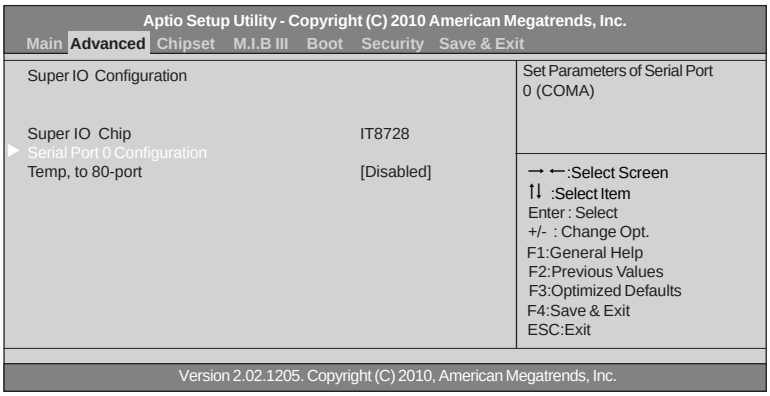
Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

Press <Esc> to return to the Advanced Menu page.

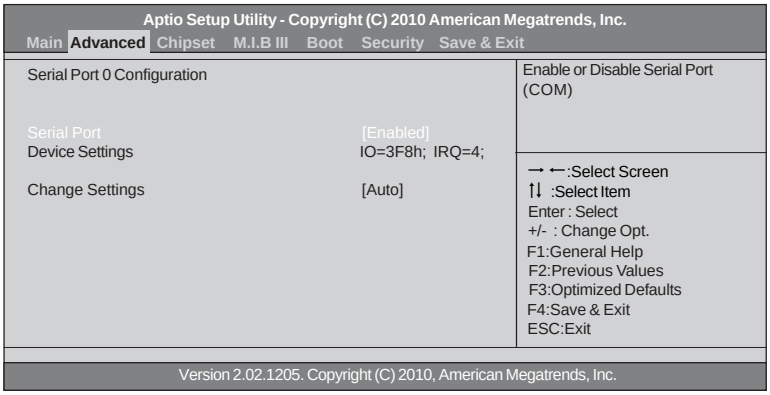
Super IO Configuration

Use this item to show the information of Super IO configuration.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Super IO Configuration
Super IO Chip IT8728
Serial Port 0 Configuration
Temp, to 80-port [Disabled]
Set Parameters of Serial Port 0 (COMA)
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Serial Port 0 Configuration

Scroll to this item and press <Enter> and view the following screen.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [Auto]
Enable or Disable Serial Port (COM)
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Serial Port (Enabled)

This item allows you to enable or disable serial port.

Device Settings (IO=3F 8h; IRQ=4)

This item shows the information of the device settings.

Change Settings (Auto)

Use this item to change device settings.

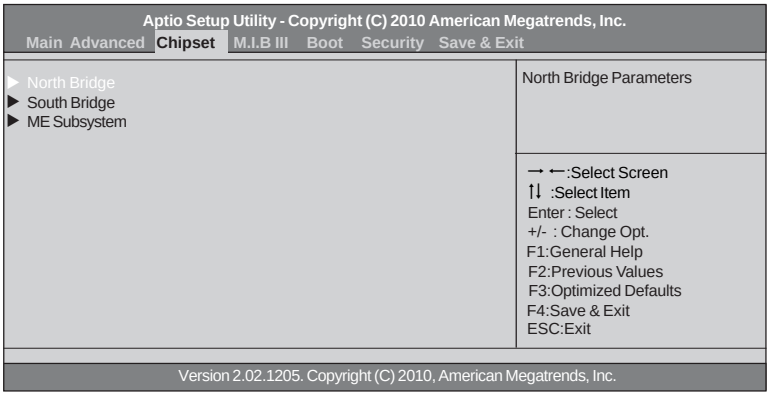
Press <Esc> to return to the Super IO Configuration page.

Temp. to 80-Port (Disabled)

This item enables or disables Temperature output 80-Port.

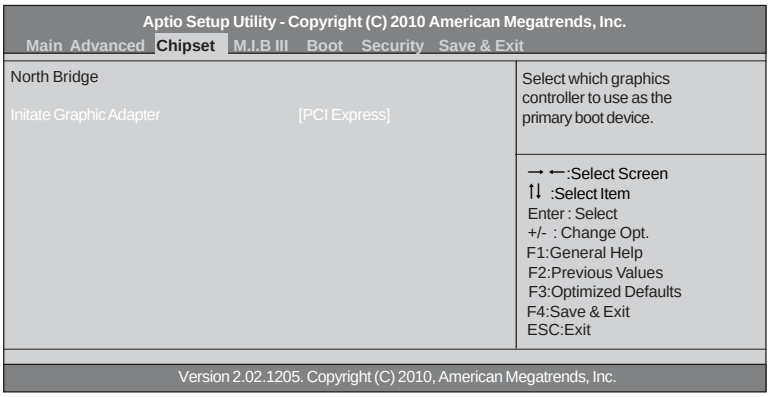
Chipset Menu

The chipset menu items allow you to change the settings for the North chipset, South chipset and other system.



North Bridge

Scroll to this item and press <Enter> and view the following screen.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
North Bridge
Initate Graphic Adapter
[PCI Express]
Select which graphics controller to use as the primary boot device.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

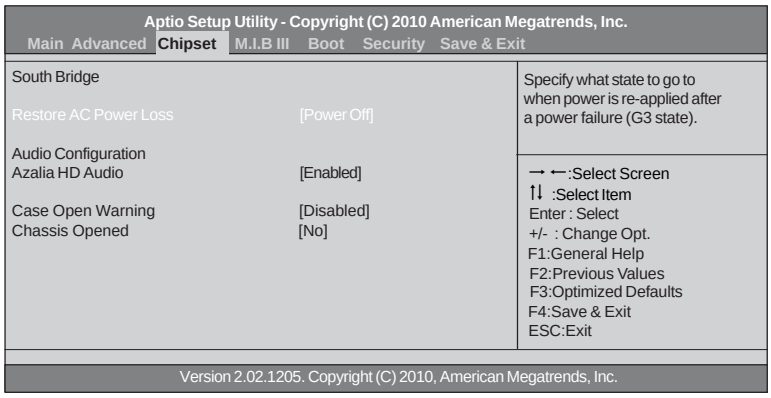
Initate Graphic Adapter (PCI Express)

This item allows you to select graphics controller to use as the primary boot device.

Press <Esc> to return to the chipset menu page.

South Bridge

Scroll to this item and press <Enter> to view the following screen.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
South Bridge
Restore AC Power Loss [Power Off]
Audio Configuration
Azalia HD Audio [Enabled]
Case Open Warning [Disabled]
Chassis Opened [No]
Specify what state to go to when power is re-applied after a power failure (G3 state).
→←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Restore AC Power Loss (Power Off)

This item specifies what state to go to when power is re-applied after a power failure (G3 state).

Audio Configuration

This item shows the information of the audio configuration.

Azalia HD Audio (Enabled)

This item enables or disables Azalia HD audio.

Case Open Warning (Disabled)

This item enables or disables the warning if the case is opened up, and the item below indicates the current status of the case.

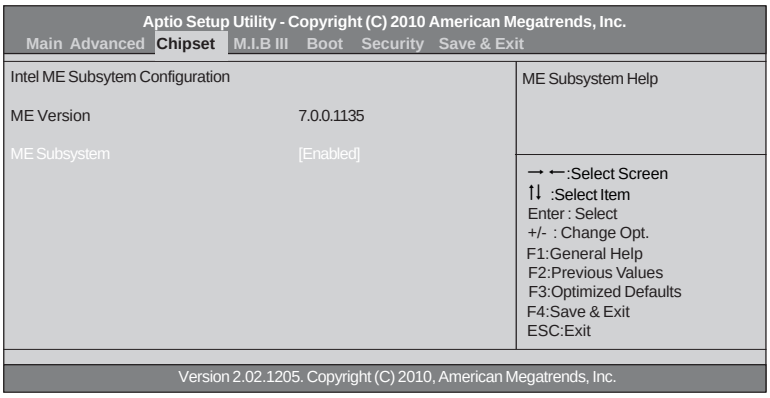
Chassis Opened (No)

This item indicates whether the case has been opened.

Press <Esc> to return to the chipset menu page.

ME Subsystem

Scroll to this item and press <Enter> to view the following screen.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Intel ME Subsytem Configuration
ME Version 7.0.0.1135
ME Subsystem [Enabled]
ME Subsystem Help
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

ME Version (7.0.0.1135)

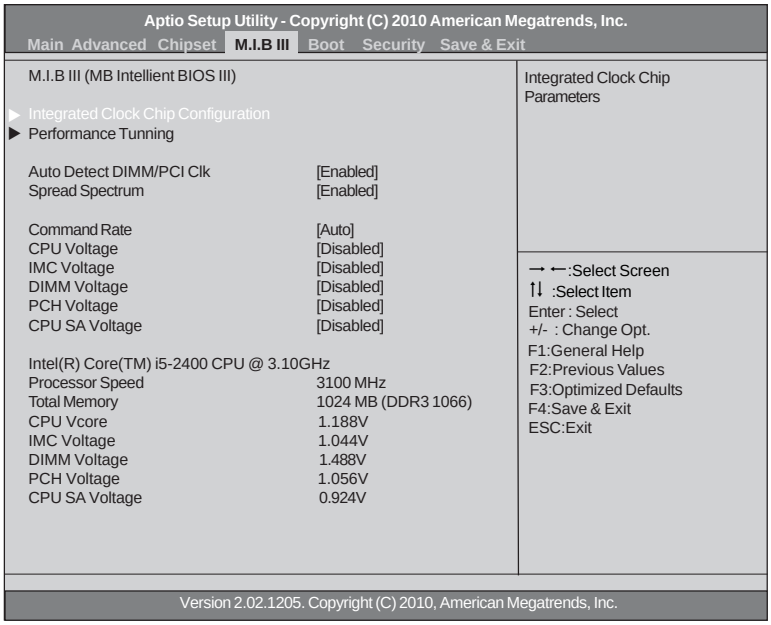
This item shows the ME version.

ME Subsystem (Enabled)

This item allows you to enable or disable ME subsystem.

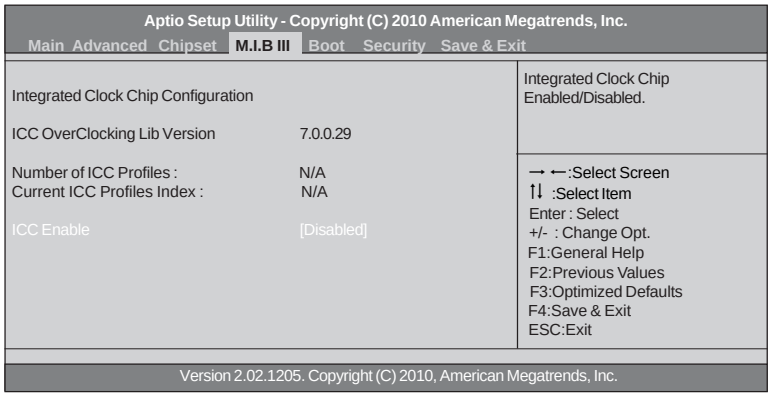
M.I.B III (MB Intellient BIOS III) Menu

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.



►Integrated Clock Chip Configuration

Scroll to this item to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Integrated Clock Chip Configuration
ICC OverClocking Lib Version 7.0.0.29
Number of ICC Profiles : N/A
Current ICC Profiles Index : N/A
ICC Enable [Disabled]
Integrated Clock Chip Enabled/Disabled.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

ICC Over-Clocking Lib Version (7.0.0.29)

This item shows the ICC over-clocking lib version.

Number of ICC Profiles (N/A)

This item shows number of ICC profiles.

Current ICC Profiles Index (N/A)

This item shows current ICC profiles index.

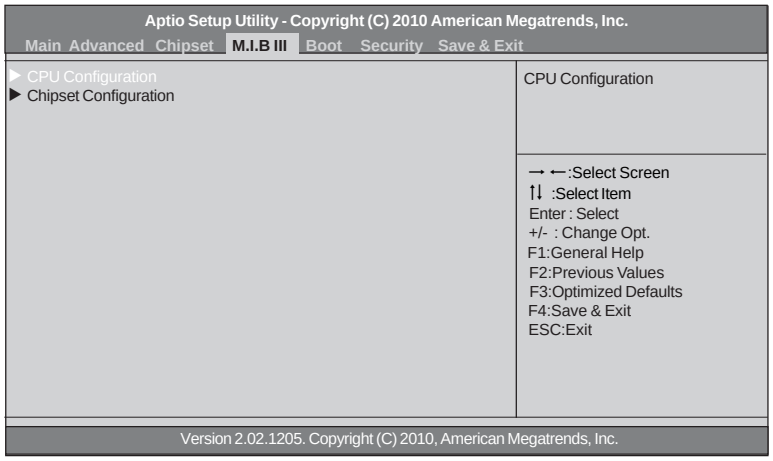
ICC Enable (Disabled)

This item allows you to enable or disable current ICC.

Press <Esc> to return to the M.I.B III menu page.

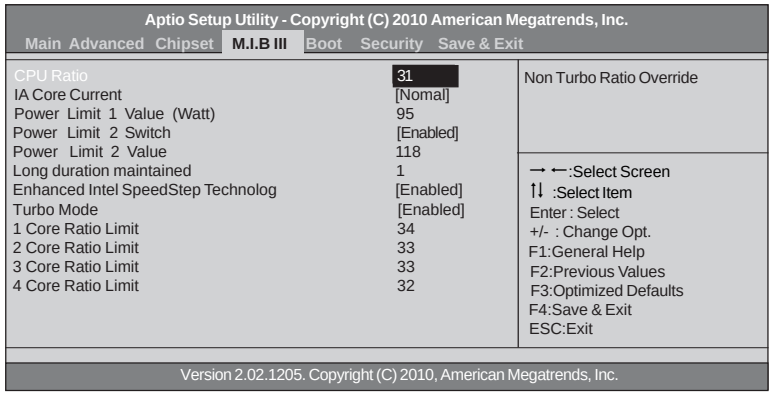
►Performance Tunning

Scroll to this item to view the following screen:



►CPU Configuration

Scroll to this item to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
CPU Ratio 31
IA Core Current [Nomal]
Power Limit 1 Value (Watt) 95
Power Limit 2 Switch [Enabled]
Power Limit 2 Value 118
Long duration maintained 1
Enhanced Intel SpeedStep Technolog [Enabled]
Turbo Mode [Enabled]
1 Core Ratio Limit 34
2 Core Ratio Limit 33
3 Core Ratio Limit 33
4 Core Ratio Limit 32
Non Turbo Ratio Override
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

CPU Ratio (31)

This item allows users to control non turbo CPU ratio.

IA Core Current (Normal)

Use this item to control CPU Current Limit. This is for Turbo mode.

Power Limit 1 Value (Watt) (95)

Use this item to control the limit of the TDP. This is for Turbo mode.

Power Limit 2 Switch (Enabled)

Use this item to control the Power Limit 2. This is for Turbo mode.

Power Limit 2 Value (118)

Use this item to control the Power Limit 2. PL2 provides an upper limit of the TDP excursions. This is for Turbo mode.

Long duration maintained (1)

Use this item to control the time window over PL1 value should be maintained. This is for Turbo mode.

Enhanced Intel SpeedStep Technolog (Enabled)

This item allows users to enable or disable the EIST (Enhanced Intel SpeedStep Technology).

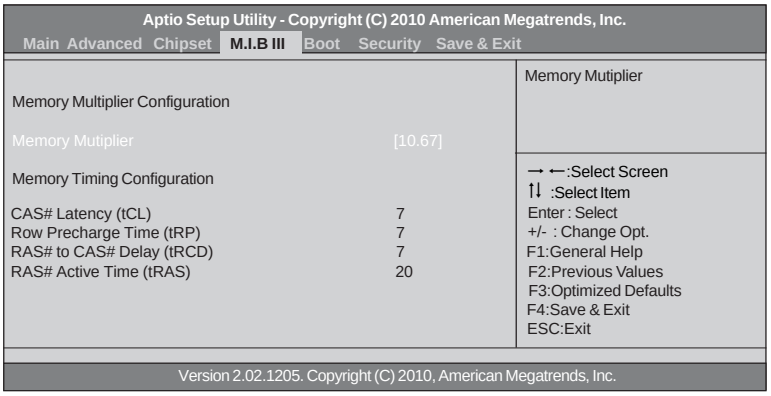
Turbo Mode (Enabled)

This item allows you to control the Intel Turbo Boost Technology.

Press <Esc> to return to the M.I.B III menu page.

►Chipset Configuration

Scroll to this item to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Memory Multiplier Configuration
Memory Mutiplier [10.67]
Memory Timing Configuration
CAS# Latency (tCL) 7
Row Precharge Time (tRP) 7
RAS# to CAS# Delay (tRCD) 7
RAS# Active Time (tRAS) 20
Memory Mutiplier
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Memory Multiplier Configuration

This item shows the information of Memory Multiplier Configuration.

CAS# Latency (tCL) (7)

This item determines the operation of DDR SDRAM memory CAS (colulmn address strobe). It is recommanded that you leave this item at the default values. The 2T setting requires faster memory that specifically supports this mode.

Row Precharge Time(tRP) (7)

This item specifies Row precharge to Active or Auto-Refresh of the same bank.

RAS# to CAS# Delay(tRCD) (7)

This item specifies the RAS# to CAS# delay to Rd/Wr command to the same bank.

RAS# Active Time(tRAS) (20)

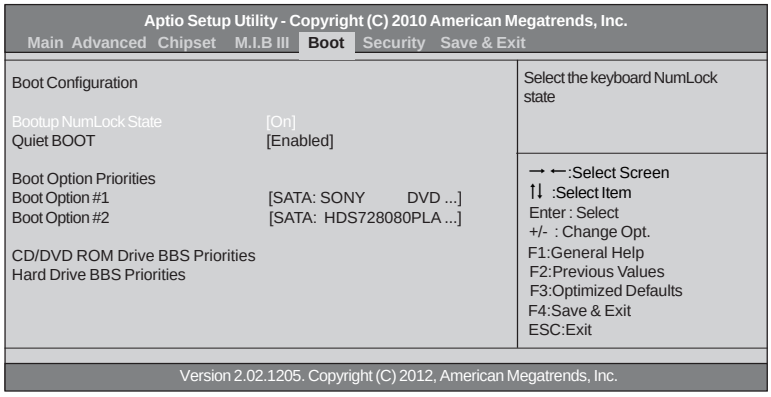
This item specifies the RAS# active time.

Press <Esc> to return to the M.I.B III menu page.

Press <Esc> to return to the M.I.B III menu page.

Boot Menu

This page enables you to set the keyboard NumLock state.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
Boot Configuration
Bootup NumLock State [On]
Quiet BOOT [Enabled]
Boot Option Priorities
Boot Option #1 [SATA: SONY DVD ...]
Boot Option #2 [SATA: HDS728080PLA ...]
CD/DVD ROM Drive BBS Priorities
Hard Drive BBS Priorities
Select the keyboard NumLock state
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
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Boot Configuration

This item shows the information of the Boot Configuration.

Bootup NumLock State (On)

This item enables you to select NumLock state.

Quiet BOOT (Enabled)

This item enables or disables quiet boot.

Boot Option Priorities

This item enables you to set boot option priorities.

Boot Option #1/#2 (SATA: SONY DVD .../SATA: HDS728080PLA ...)

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

CD/DVD ROM Drive BBS Priorities

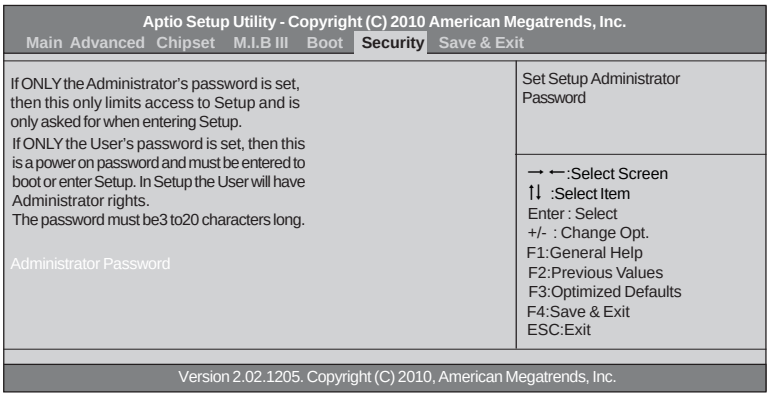
This item enables you to specify the sequence of loading the operating system from the installing CD/DVD ROM drives.

Hard Drive BBS Priorities

This item enables you to specify the sequence of loading the operating system from the installing hard drives.

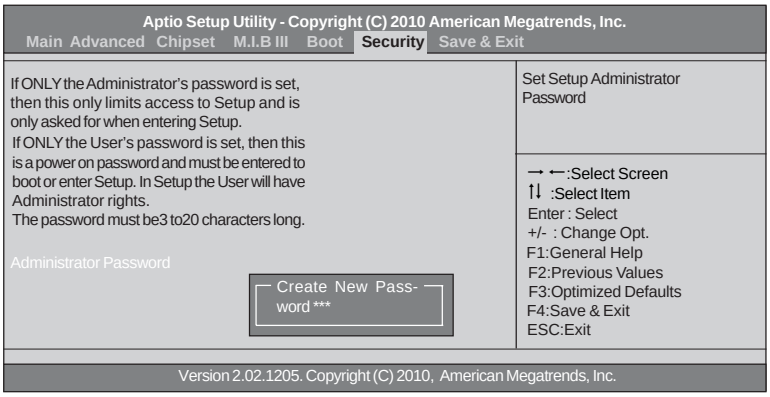
Security Menu

This page enables you to set setup administrator and password.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password must be3 to20 characters long.
Administrator Password
Set Setup Administrator Password
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

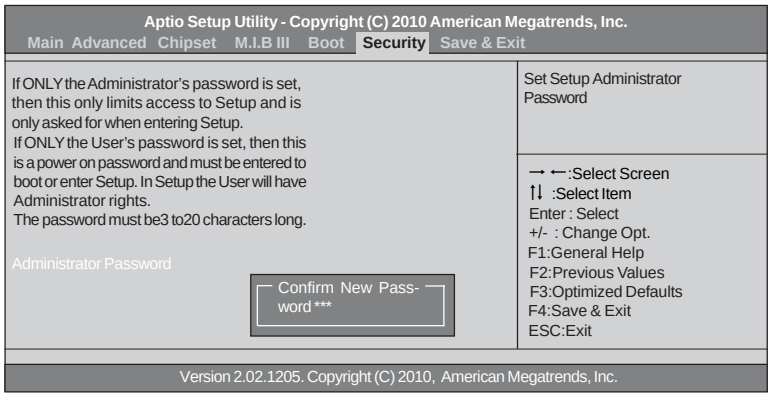
Administrator Password

Scroll to this item and press <Enter> to view the following screen.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password must be3 to20 characters long.
Administrator Password
Create New Password ***
Set Setup Administrator Password
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

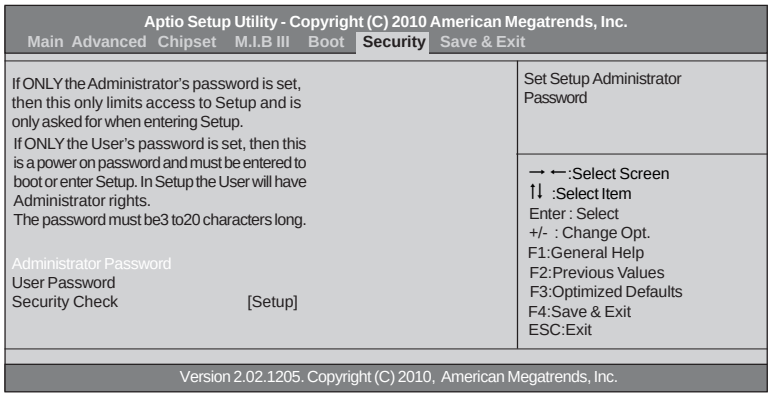
Create New Password

Use this item to set setup administrator password.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password must be3 to20 characters long.
Administrator Password
Confirm New Password ***
Set Setup Administrator Password
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Confirm New Password

Use this item to confirm setup administrator password.

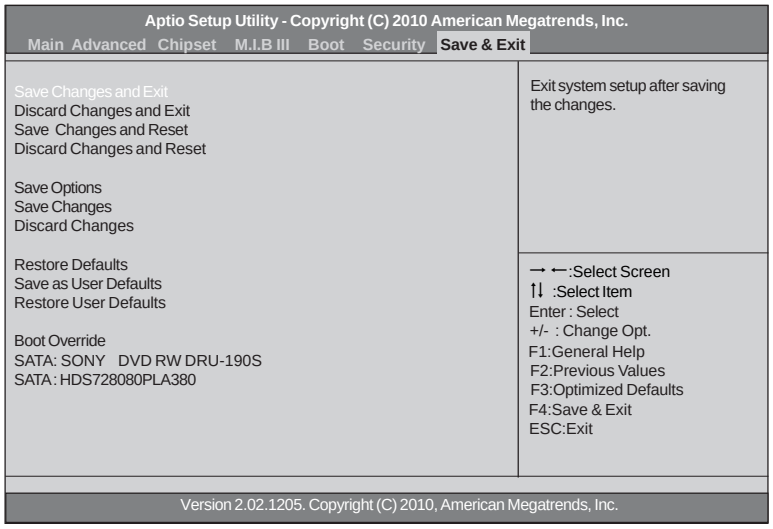

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B III Boot Security Save & Exit
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password must be3 to20 characters long.
Administrator Password
User Password
Security Check [Setup]
Set Setup Administrator Password
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Values
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.02.1205. Copyright (C) 2010, American Megatrends, Inc.

Setup

This item indicates a user password has been set.

Save & Exit Menu

This page enables you to exit system setup after saving or without saving the changes.



Save Changes and Exit
Use this item enables you to exit system setup after saving the changes.

Discard Changes and Exit
Use this item enables you to exit system setup without saving any changes.

Save Changes and Reset
Use this item enables you to reset the system setup after saving the changes.

Discard Changes and Reset
Use this item enables you to reset system setup without saving any changes.

Save Options
Use this item enables you to save the options that you have made.

Save Changes
Use this item enables you to save the changes that you have made.

Discard Changes
Use this item enables you to discard any changes that you have made.

Restore Defaults
Use this item enables you to restore the system defaults.

Save as User Defaults
Use this item enables you to save the changes that you have made as user defaults.

Restore User Defaults
Use this item enables you to restore user defaults to all the setup options.

Boot Override

Use this item enables you to set the device order.

SATA: SONY DVD RW DRU-190S

Use this item enables you to set the device order.

SATA: ST3306260AS

Use this item enables you to set the device order.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
5. Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6. At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM
7. When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Chapter 4
Using the Motherboard Software

About the Software DVD-ROM/CD-ROM

The support software DVD-ROM/CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT or something similar. These files may contain important information that is not included in this manual.

1. Never try to install all software from folder that is not specified for use with your motherboard.

2. The notice of Intel HD Audio Installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center ***"before"*** *installing HD audio driver bundled in the driver disk. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

Auto-installing under Windows XP/Vista/7

The Auto-install DVD-ROM/CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install DVD-ROM/CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software DVD-ROM/CD-ROM disc loads automatically under Windows XP/Vista/7. When you insert the DVD-ROM/CD-ROM disc in the DVD-ROM/CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

* For reference only

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Drivers

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Utilities	Click the **Utilities** button to display the application software and other software utilities that are available on the disk. Select the sofware you want to install then follow installation procedure.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk. Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems. In installing the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Utilities

Lists the software utilities that are available on the disk.

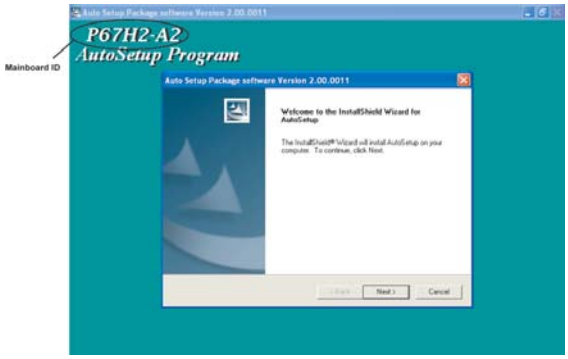
Information

Displays the path for all software and drivers available on the disk.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

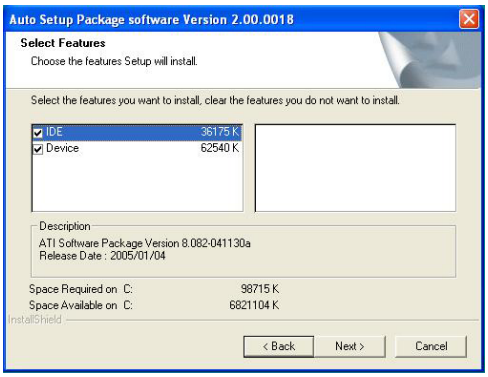
1. *Click **Setup**. The installation program begins:*



The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

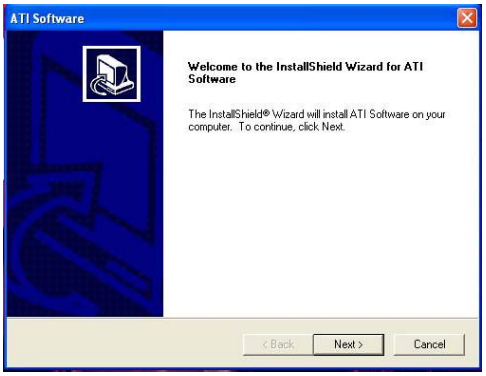
The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0018
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
IDE 36175 K
Device 62540 K
Description
ATI Software Package Version 8.082-041130a
Release Date : 2005/01/04
Space Required on C: 98715 K
Space Available on C: 6821104 K
InstallShield
< Back
Next >
Cancel

3. *Check the box next to the items you want to install. The default options are recommended.*

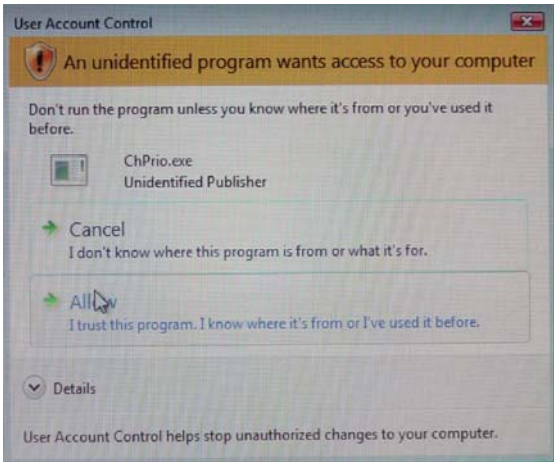
4. *Click **Next** run the Installation Wizard. An item installation screen appears:*


ATI Software
Welcome to the InstallShield Wizard for ATI Software
The InstallShield® Wizard will install ATI Software on your computer. To continue, click Next.
< Back
Next >
Cancel

5. *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Windows Vista/7 will appear below UAC (User Account Control) message after the system restart. You must select "Allow" to install the next driver. Continue this process to complete the drivers installation.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
ChPrio.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.

Manual Installation

Insert the disk in the DVD-ROM/CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.

Chapter 5
ATI CrossFireX™ Technology Support

This motherboard supports the ATI CrossFireX™ Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

Requirements

1 Two identical CrossFireX™ ready graphic cards are needed for the setup of 2-way CrossFireX™ configuration.
2 You would need one CrossfireX™ bridge cable.
3 Make sure that your graphics card driver supports the ATI CrossFireX™ technology. Download the latest driver from the ATI website (www.ati.com).
4 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

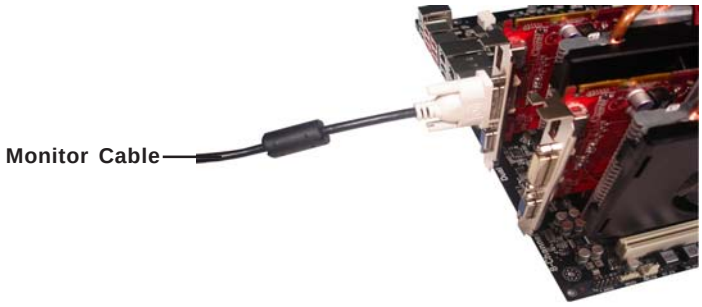
Installing CrossFireX™ graphics cards

1. Insert the CrossFireX™ graphics cards into the **PCIEX16** slots. Make sure that the card is properly seated on the slot.

A. For 2-way configuration, install two graphic cards on PCIEX16_1 & PCIEX16_2 and connect them with the CrossFire™ Bridge.

** For reference only*

2. Connect the cable from your monitors to the CrossFireX™ ready graphics card installed on the **PCIEX16_1** slot.



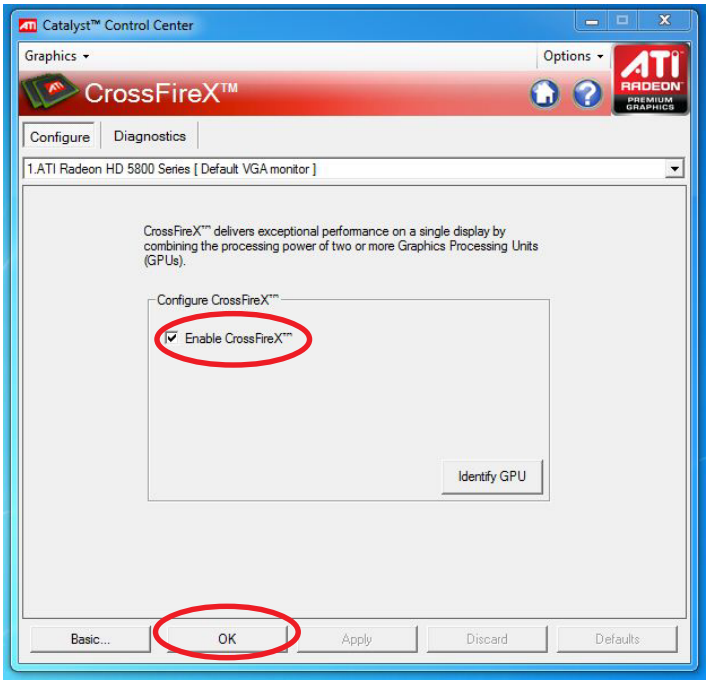
** For reference only*

3. Connect an auxiliary power source from the power supply to the graphics cards.

The Catalyst™ Control Center Dialog Box

To enable CrossFireX™:

- Install ATI graphic card driver.
- Enter the Catalyst™ Control Center Dialog Box.
- check the "Enable CrossFireX™" item.
- Click OK to apply.



Memo

Chapter 6

NVIDIA® SLI® Technology Support

This motherboard supports the NVIDIA® SLI® Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation proce-dures in this section.

Requirements

1. Two identical SLI® ready graphic cards are needed for the setup of 2-Way SLI configuration.

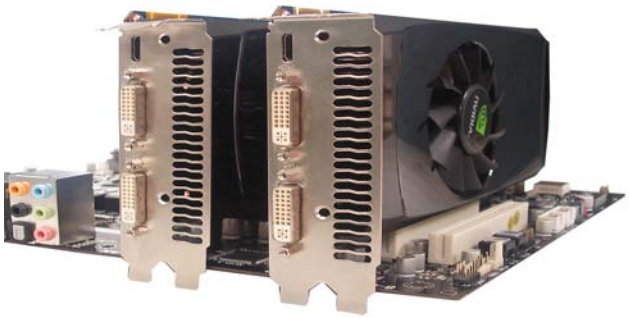
2. Make sure that your graphics card driver supports the NVIDIA® SLI® technology.

3. Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.800W PSU is required for the setup of 2-way SLI configuration.

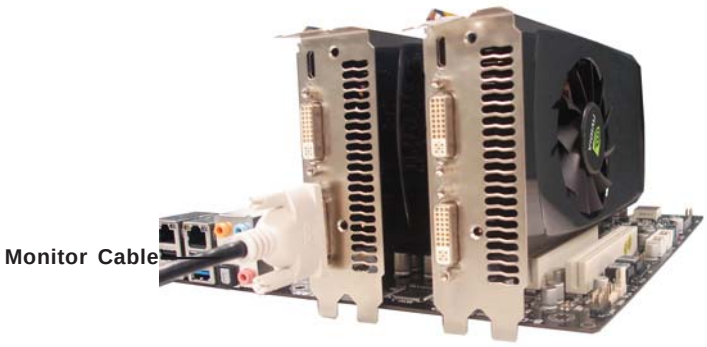
Installing your NVIDIA® SLI-Ready Components

1. Install both of the NVIDIA® SLI-Ready graphics cards.

For 2-Way configuration, install two graphic cards on PCIEX16_1 & PCIEX16_2 and connect them with one SLI bridge.



2. Connect the cable from your monitors to the SLI-Ready graphics card installed on the **PCIEX16_1** slot.



Once the new NVIDIA® SLI-certified components have been installed in the system,they will be recognized by the operating system upon Windows boot-up. A Found NewHardware message will be displayed:

Enabling NVIDIA® SLI

1. Click on the SLI capable system message to open the following window.

Set SLI Configuration
Control Panel Categories » 3D Settings
Your graphics cards feature NVIDIA SLI technology for significant improvement in rendering performance
Select the SLI configuration for your system:
Do not use SLI technology
Enable SLI technology (recommended)
SLI

Description:

All NVIDIA® GPUs work together with SLI technology to increase the rendering performance of your 3D applications.

Typical usage scenarios:

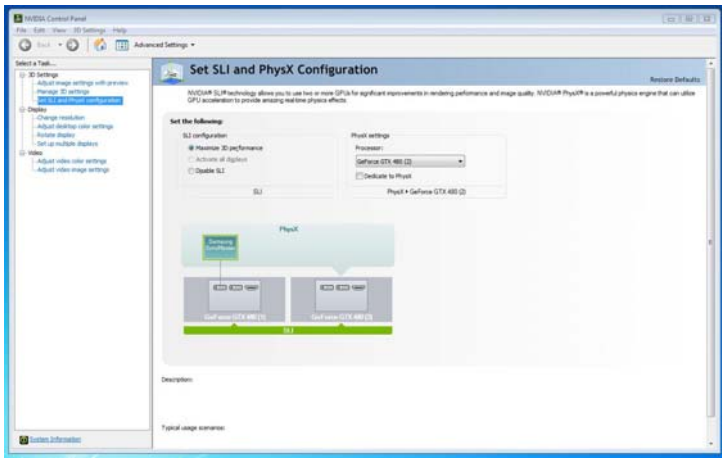
- Playing 3D games
- Using any application that renders hardware-accelerated Direct 3D or OpenGL content.

2. Select the checkbox Enable SLI technology and then click Apply

You now have an NVIDIA® SLI-enabled PC!

You can also access these settings by opening the NVIDIA® Control Panel (right-click on desktop), clicking on 3D Settings (shown below) and then selecting "SetSLI configuration".

Control Panel Setting of 2-Way SLI



All in all, the NVIDIA SLI technology works.

This concludes Chapter 6.

Chapter 7
Setting Up eJIFFY

Introduction

eJIFFY is a fast boot program under Linux. Instead of waiting Windows O.S to start execution, eJIFFY is ready to provide users the instant enjoyment on web browsing, photo review and online chat just within several seconds after boot up.

Note: eJIFFY is ECS ***optional*** feature utility corresponding to the DVD activation and BIOS setup. Please check the hard copy user's guide or product color-box to see if the model has embodded eJIFFY feature. (eJIFFY icon on color-box)

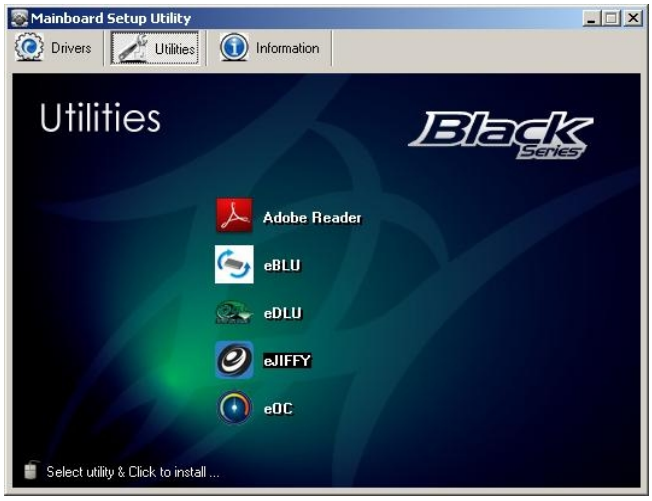
Version: 6.0

Installation and BIOS Setup

DVD Activation

Finish the DVD utility setup, and then set the BIOS to complete eJIFFY activation.

1. Insert ECS software utility DVD and enter below "Utilities" screen. Click eJIFFY feature item to install.



2. Follow the onscreen instructions to finish eJIFFY setup.

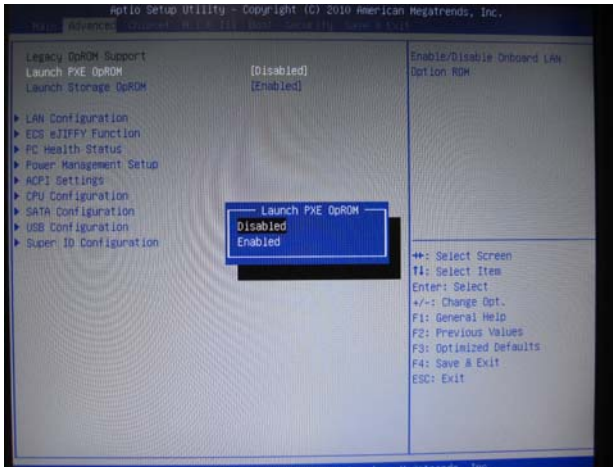
Setup - eJIFFY
Welcome to the eJIFFY Setup Wizard
This will install eJIFFY x.x.xx on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

Setting Up eJIFFY

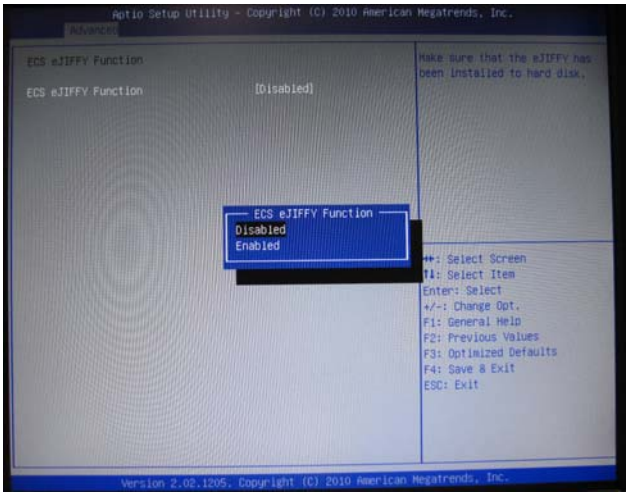
3. After setting up eJIFFY under Windows, you can switch eJIFFY display/keyboard language from English to your local language. The changes will be applied after rebooting.

Note: The keyboard language selection list offers several more regional keyboard setups to switch with the default English typing. Please refer to the usage FAQ for more tips.

4. Restart your computer after eJIFFY installation. Press <DEL> or click the BIOS Setup button on the post screen to enter the BIOS setup page after boot up.



5. And then enter the *Advanced Setup* page to enable the item *ECS eJIFFY Function*. Press F4 to save the configuration and exit. Restart your computer.

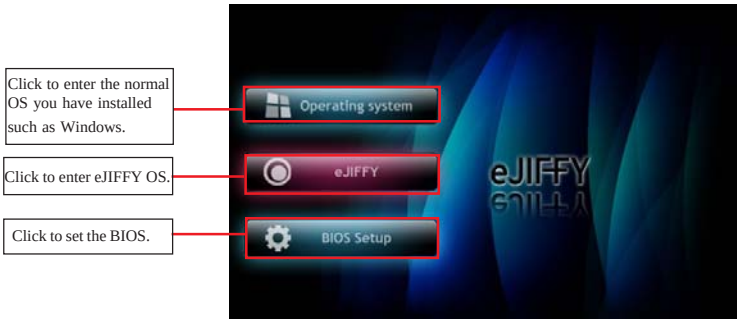


Note: 1. eJIFFY is available in SATA/IDE/AHCI mode. It does not support RAID configuration and the onboard 34-pin floppy drives.

2. Please refer to ECS website for new eJIFFY application updates.

Entering eJIFFY

The post screen appears within several seconds after boot up and it has three buttons on it, Operating system, eJIFFY and BIOS Setup.


Click to enter the normal OS you have installed such as Windows.
Click to enter eJIFFY OS.
Click to set the BIOS.
Operating system
eJIFFY
BIOS Setup
eJIFFY

If you click eJIFFY, the following screen will appear. And If you make no choice it will enter the normal OS automatically after ten seconds.

Feature Icons

The following illustration shows the main feature icons that eJIFFY provides on the menu.

eWeb: Firefox for web browsing/webmail and watching flash video.

ePix: Photo viewing.

ePal: On-line chat tool to use the most popular IMs in the world. (MSN, ICQ, AIM, etc.)

Shows ePal on-line connection status.

Shut Down/Restart: Ends your session and turns off the computer./Ends your session and restart the computer..

Shows the network connection status.

Click once to connect the storage disk to your computer. Click for the second time to remove your storage disk safely. (please refer to the FAQ for more usage information.)

Language Control Panel

Switch Keyboard Languages

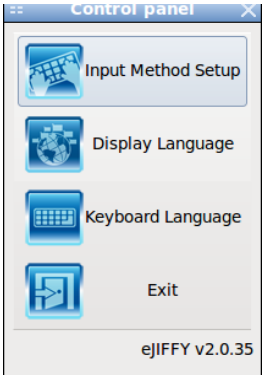
Allows you to adjust the sound volume level from mute to the max

Usage FAQ

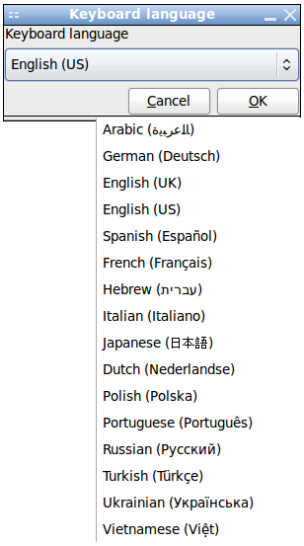
Language Control Panel: Besides setting English as the default interface, eJIFFY offers multi-language displays and keyboard settings for language-switch. Open the language control panel to select a preferable language setting.

Keyboard Language Setup

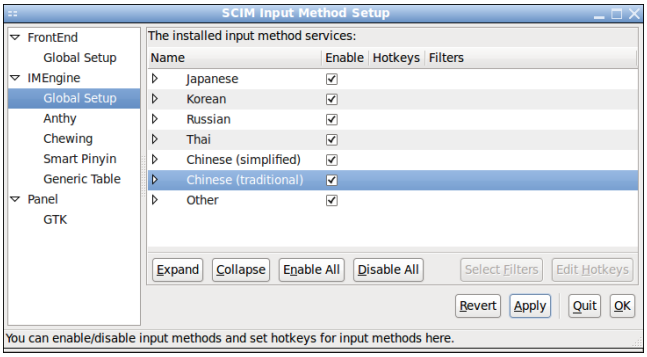
Step1. Click to open the language control panel.



Step 2: Click “Keyboard Language” icon to open the keyboard selection list, which offers several regional keyboard settings besides default English keyboard.
Step 3: Click the selected keyboard language (e.g. English(US)) and press “OK”.



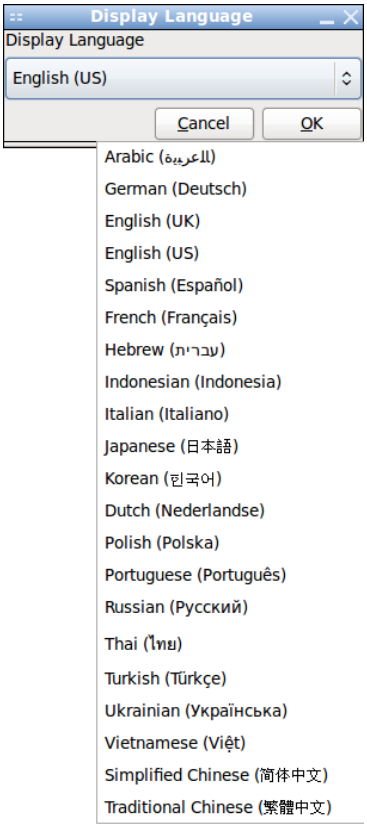
Click to enable all possible language inputs you want to apply, and click "Apply":



Move your mouse pointer on the text box and press Ctrl+Space. The language bar will then appear as follows.
Click the language bar here.
Done
Anthy

How to change display language?

Open the Language Control Panel and click to show the display language list. Check your desired display language. Your selected display language will be applied after rebooting.

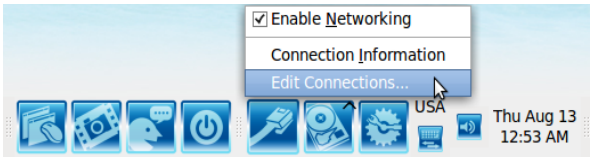


How to set networking connection?

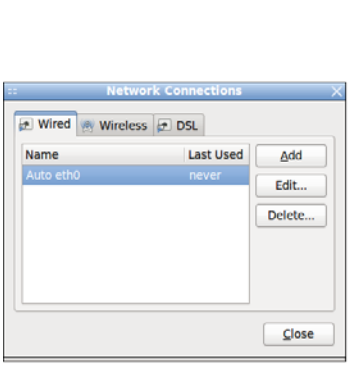
If you do not have IP shared server(direct link), you can select the icon and press the right key of your mouse.

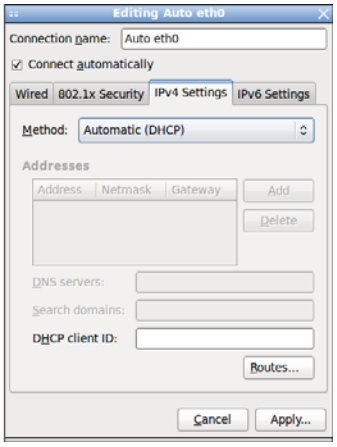
1. Show the networking connection status.
2. If you want to set the networking connection, you can press the right key of your mouse to edit it.

Step1 Select the icon , press the right key of your mouse, then select “Edit Connection...” item.



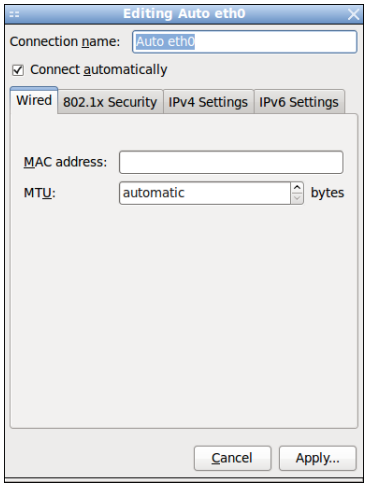
Step2 Select the connection you want (eg. Wired) and click “+Add” button.



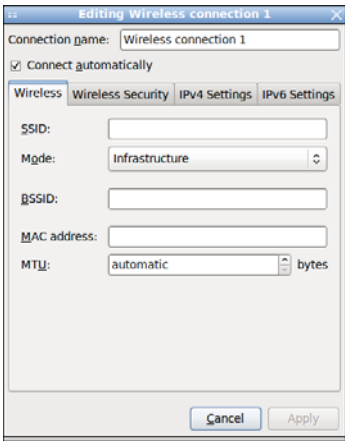


Types of connections

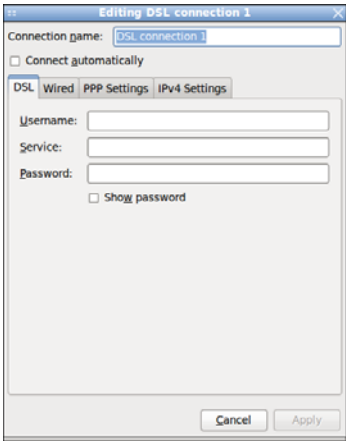
(1) Wired connection



(2) Wireless connection



(3) DSL connection



Note: *Details about eJIFFY please refer to eJIFFY in disk.*

Memo

Chapter 8
Intel® Matrix Storage Manager RAID Configurations

The Intel® Matrix Storage Manager allows you to configure RAID 0, and 1 sets on the external Serial ATA hard disk drives.

Before creating a RAID set

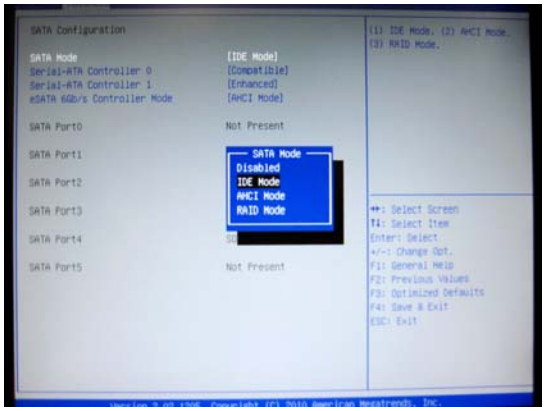
Prepare the following items:

1. One SATA HDD.
2. A write-enabled floppy disk.
3. Microsoft® Windows® OS installation disk (Windows XP/Vista).
4. Motherboard support CD with Intel® Matrix Storage Manager driver.

Complete the following steps before you create a RAID set:

1. Install the external Serial ATA hard disk drive (HDD) on your system.
2. Set the *Onboard SATA Mode* item in the BIOS to *.RAID*..

   See section “Integrated Peripherals” for details.



3. Enter the Intel® Matrix Storage Manager option to set up your RAID configuration.
4. Create an Intel® Matrix Storage Manager driver disk for Windows® OS installation. See section “Creating a RAID driver disk” for details.
5. Install the Intel® Matrix Storage Manager driver after the Windows® OS had been installed.

Entering Intel® Matrix Storage Manager RAID BIOS utility

1. During POST, press <Ctrl-I> to enter the Intel® Matrix Storage Manager RAID BIOS menu.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...

2. The main Intel® Matrix Storage Manager RAID BIOS menu appears.

3. Use the arrow keys to move the color bar and navigate through the items.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

Creating a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Create RAID Volume* using the up/down arrow key then press <Enter>.

2. When the *RAID Level* item is highlighted, use the up/down arrow key to select the RAID set that you want to create.

When more than two HDDs are installed in your computer, the *Disks* item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.

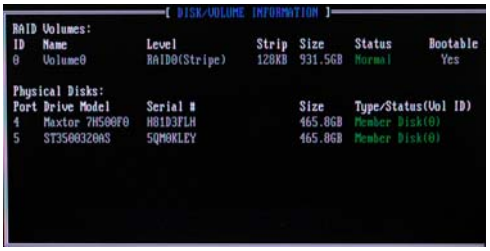
3. Key in the RAID volume capacity. Use the up/down arrow to choose the *Capacity*. The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.

4. When done, press <Enter> to confirm the creation of the RAID set. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

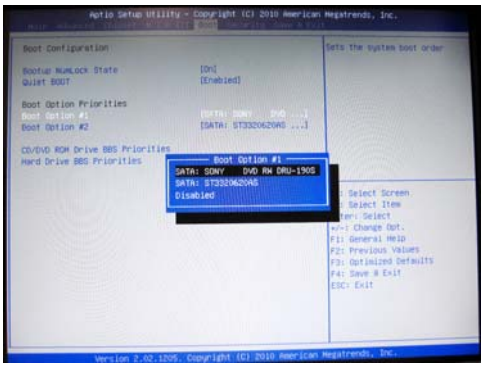
Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 931.5 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to create this volume? (Y/N):
Press ENTER to create the specified volume.
[↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

Pressing <Y> deletes all the data in the HDDs.

5. The following screen appears, displaying the relevant information about the RAID set you created.


[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 931.5GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Member Disk(0)
5 ST3500320AS 5QM0KLEY 465.8GB Member Disk(0)

Users please be noted that RAID 0 (Stripe) is set to accelerate the data access, and RAID 1 (Mirror) is set to provide the data backup. If you want to set RAID 0, you need to set the *2nd Boot Device* item in the BIOS to *Intel Volume0*. See section "Advanced Setup" for details.



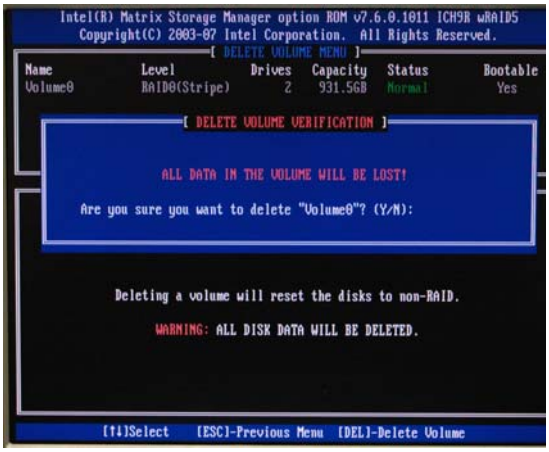
Deleting a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Delete RAID Volume* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the RAID set you want to delete.

   Press the <Del> key to delete the set.

3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.


Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[DELETE VOLUME MENU]
Name Level Drives Capacity Status Bootable
Volume0 RAID0(Stripe) 2 931.5GB Normal Yes
[DELETE VOLUME VERIFICATION]
ALL DATA IN THE VOLUME WILL BE LOST!
Are you sure you want to delete "Volume0"? (Y/N):
Deleting a volume will reset the disks to non-RAID.
WARNING: ALL DISK DATA WILL BE DELETED.
[↑↓]Select [ESC]-Previous Menu [DEL]-Delete Volume

Pressing <Y> deletes all the data in the HDDs.

Resetting disks to Non-RAID

An HDD that has been previously configured as part of another RAID set in another platform is called a broken RAID HDD. When you install a broken RAID HDD, you cannot select this disk when configuring a RAID set through the Intel® Matrix Storage Manager option. If you still want to use this broken RAID HDD as part of the RAID set configured through the Intel® Matrix Storage Manager, you may do so by resetting the disk to Non-RAID. You will, however, lose all data and previous RAID configurations.

To reset disks to Non-RAID:

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Reset Disks to Non-RAID* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the HDD to reset to Non-RAID.
3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

Pressing <Y> deletes all the data in the HDDs.

Exiting Setup

When you have finished, highlight *Exit* using the up/down arrow key then press <Enter> to exit the Intel® Matrix Storage Manager RAID BIOS utility.

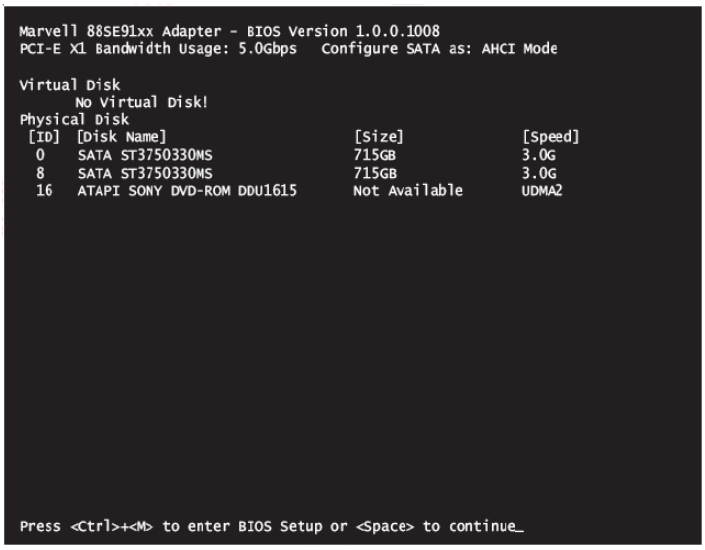
A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N> to return to the Intel® Matrix Storage Manager RAID BIOS menu.

Chapter 9
Marvell 88SE9128 SATA 6Gb/s RAID Controller BIOS Setup

The 88SE9128 controller supports the creation of RAID 0 and RAID 1 virtual disks comprising of exactly two SATA physical disks.

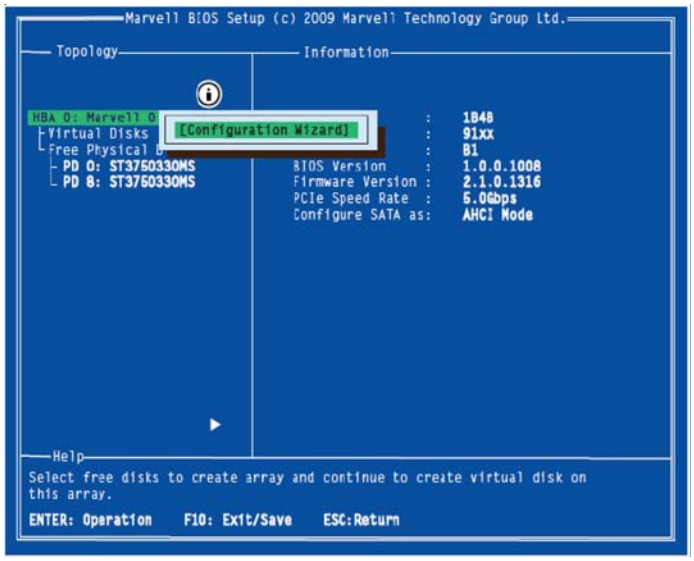
The following shows the messages displayed during the POST of P67H2-A motherboard.

Press **<Ctrl> + <M>** to launch Marvell BIOS Utility**.**

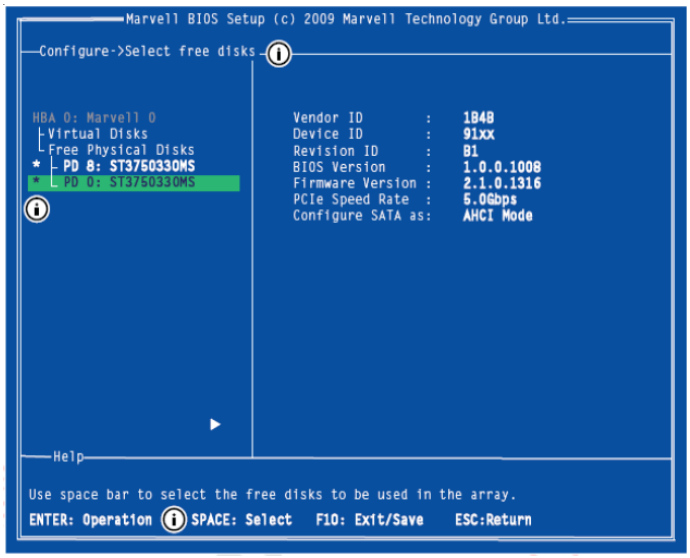

Marvell 88SE91xx Adapter - BIOS Version 1.0.0.1008
PCI-E X1 Bandwidth Usage: 5.0Gbps Configure SATA as: AHCI Mode
Virtual Disk
No Virtual Disk!
Physical Disk
[ID] [Disk Name] [Size] [Speed]
0 SATA ST3750330MS 715GB 3.0G
8 SATA ST3750330MS 715GB 3.0G
16 ATAPI SONY DVD-ROM DDU1615 Not Available UDMA2
Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue_

To Create Virtual Disks

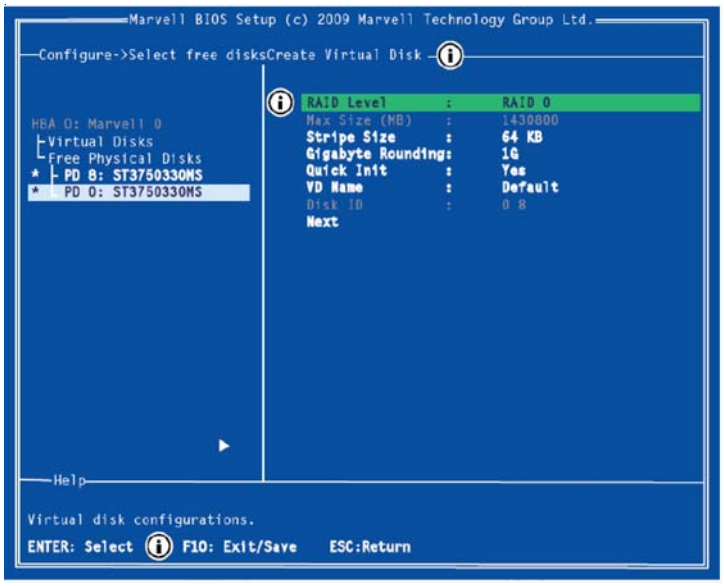
1. Enter the **Topology** pane, scroll the **HBA 0: Marvell 0**. Press **Enter** to select **Configuration Wizard** to begin creating the virtual disk.



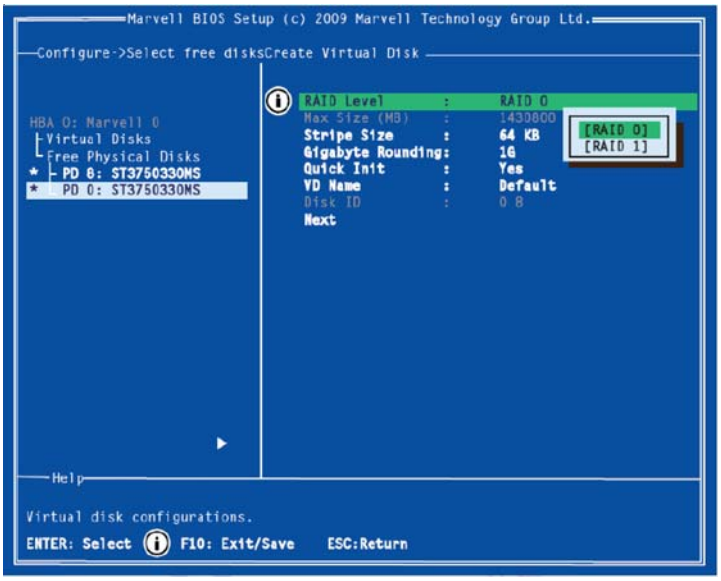
2. Use the arrow keys to scroll the list of free disks. Press **Space** to select/unselect a disk and press **Enter** to continue. An asterisk will appear to the left of the selected disks.


Marvell BIOS Setup (c) 2009 Marvell Technology Group Ltd.
Configure->Select free disks
HBA 0: Marvell O
Virtual Disks
Free Physical Disks
* PD 8: ST3750330MS
* PD 0: ST3750330MS
Vendor ID : 1B4B
Device ID : 91xx
Revision ID : B1
BIOS Version : 1.0.0.1008
Firmware Version : 2.1.0.1316
PCIe Speed Rate : 5.0Gbps
Configure SATA as: AHCI Mode
Help
Use space bar to select the free disks to be used in the array.
ENTER: Operation SPACE: Select F10: Exit/Save ESC:Return

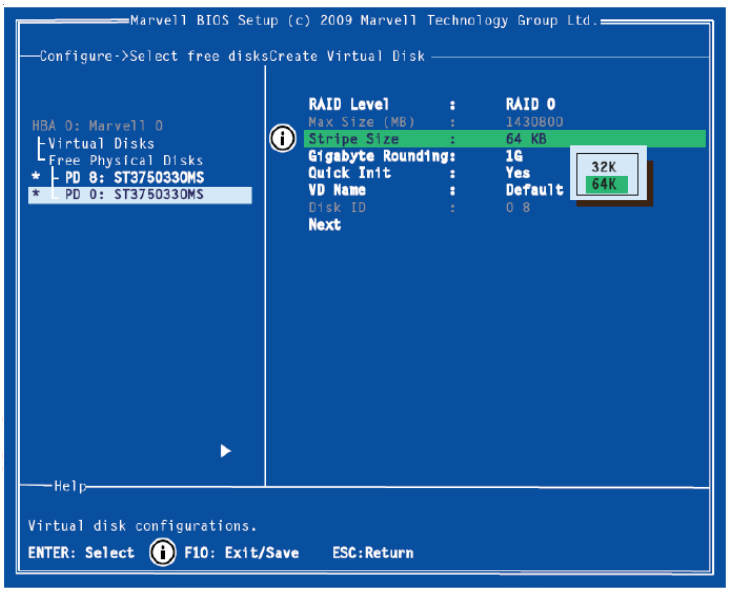
3. Create **Virtual Disk** by configuring its settings in the Information pane.



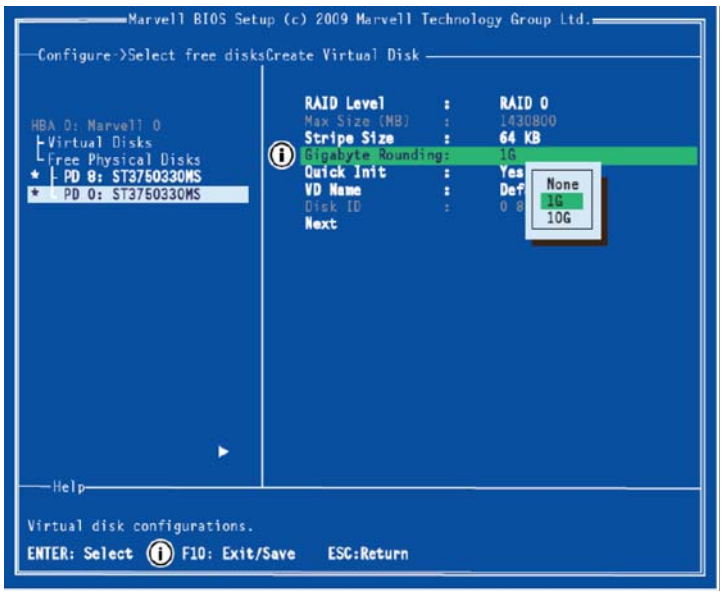
4. Press **Enter** to select a **RAID Level** (RAID 0, RAID1).



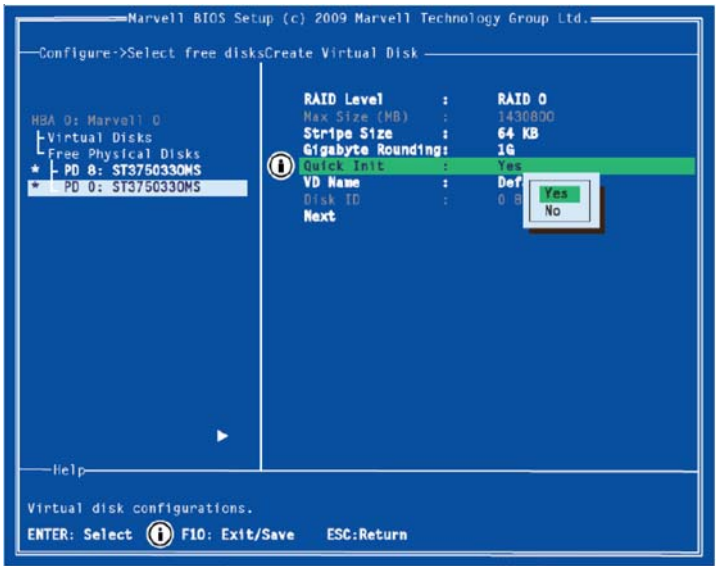
5. Scroll to **Stripe Size** and press **Enter** to select 32K or 64K for the selected RAID Level.



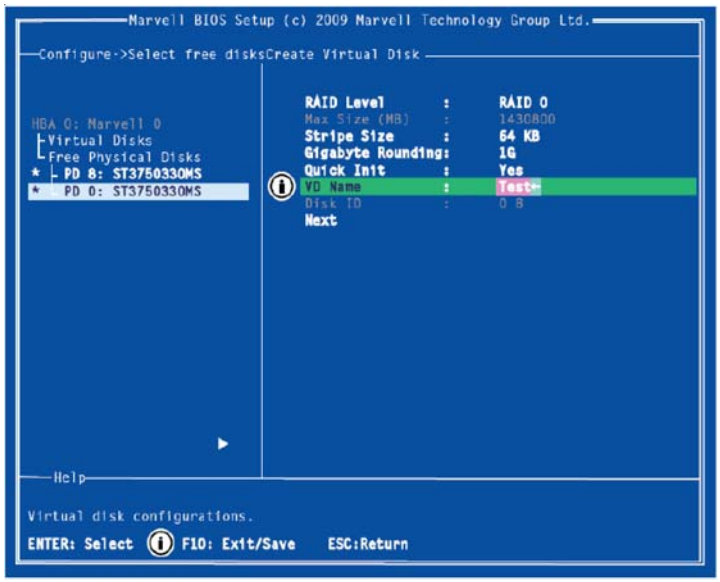
6. Scroll to **Gigabyte Rounding** and press **Enter** to select None, 1G or 10G.



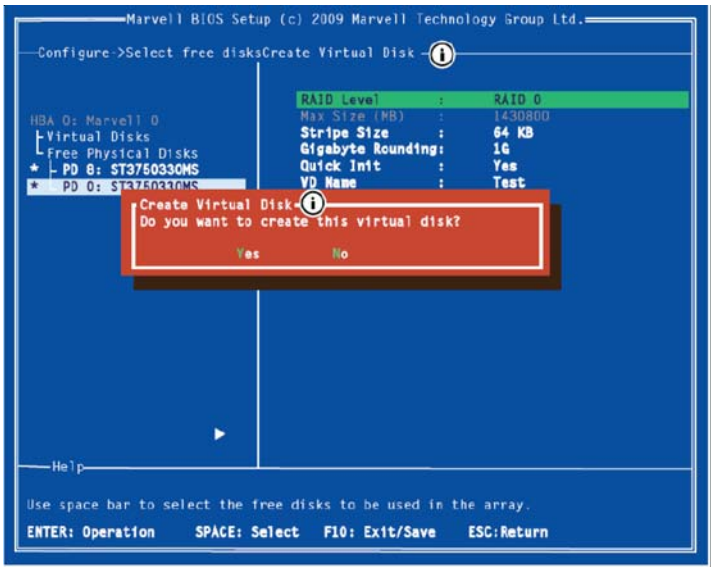
7. Scroll to Quick Init and press **Enter** to select Yes or No.



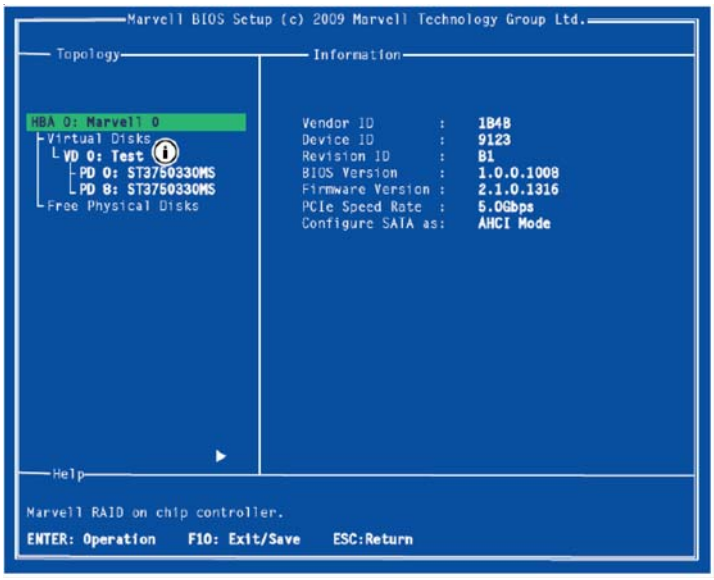
8. Scroll to **VD Name** to type a new name, and press **Enter** to confirm the selection.



9. Scroll to **Next** and press **Enter** to create the virtual disks after configuring the virtual disk. Then press **Y** to select **YES.**


Marvell BIOS Setup (c) 2009 Marvell Technology Group Ltd.
Configure->Select free disksCreate Virtual Disk
HBA 0: Marvell 0
Virtual Disks
Free Physical Disks
PD 8: ST3750330MS
RAID Level : RAID 0
Max Size (MB) : 1430800
Stripe Size : 64 KB
Gigabyte Rounding: 1G
Quick Init : Yes
VD Name : Test
Create Virtual Disk
Do you want to create this virtual disk?
Yes No
Help
Use space bar to select the free disks to be used in the array.
ENTER: Operation SPACE: Select F10: Exit/Save ESC:Return

The virtual disk is now listed in the **Topology** pane.



Chapter 10
Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1.Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

5. Check the 12V power connector is connected to the motherboard.

6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps : memory not detected
   b. 1 long beep and 8 short beeps : VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.
2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

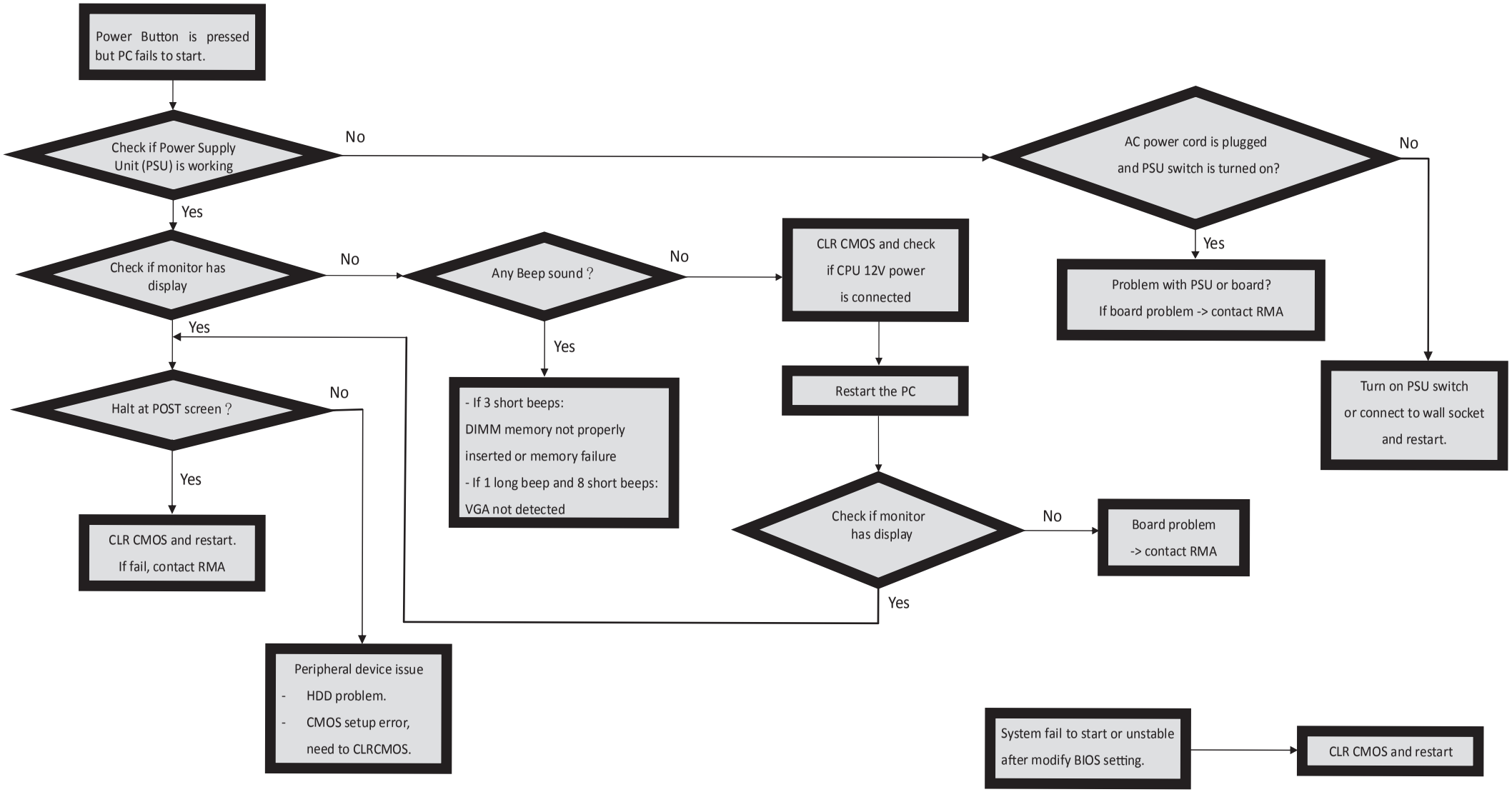
4. Remove the hard drive, optical drive or DDR memory to determine which of these component may be at fault.

Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.
2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.
3. Routinely clean the CPU cooler fan to remove dust and hair.
4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.
5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its lifespan.
6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Basic Troubleshooting Flowchart


Power Button is pressed but PC fails to start.
Check if Power Supply Unit (PSU) is working
No
AC power cord is plugged and PSU switch is turned on?
No
Yes
Problem with PSU or board? If board problem -> contact RMA
Turn on PSU switch or connect to wall socket and restart.
Yes
Check if monitor has display
No
Any Beep sound ?
No
CLR CMOS and check if CPU 12V power is connected
Yes
- If 3 short beeps: DIMM memory not properly inserted or memory failure
- If 1 long beep and 8 short beeps: VGA not detected
Restart the PC
Yes
Halt at POST screen ?
No
Yes
CLR CMOS and restart. If fail, contact RMA
Check if monitor has display
No
Board problem -> contact RMA
Yes
Peripheral device issue
- HDD problem.
- CMOS setup error, need to CLRCMOS.
System fail to start or unstable after modify BIOS setting.
CLR CMOS and restart

Memo

POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS :

Checkpoint	Description
01-0F	SEC Status Codes & Errors
10-2F	PEI execution up to and including memory detection
30-4F	PEI execution after memory detection
50-5F	PEI errors
60-CF	DXE execution up to BDS
D0-DF	DXE errors
E0-E8	S3 Resume (PEI)
E9-EF	S3 Resume errors (PEI)
F0-F8	Recovery (PEI)
F9-FF	Recovery errors (PEI)
0	Not used
1	Power on. Reset type detection (soft/hard).
2	AP initialization before microcode loading
3	North Bridge initialization before microcode loading
4	South Bridge initialization before microcode loading
5	OEM initialization before microcode loading
6	Microcode loading
7	AP initialization after microcode loading
8	North Bridge initialization after microcode loading
9	South Bridge initialization after microcode loading
A	OEM initialization after microcode loading
B	Cache initialization
C-D	Reserved for future AMI SEC error codes
E	Microcode not found
F	Microcode not loaded
10	PEI Core is started
11	Pre-memory CPU initialization is started
12	Pre-memory CPU initialization (CPU module specific)
13	Pre-memory CPU initialization (CPU module specific)
14	Pre-memory CPU initialization (CPU module specific)
15	Pre-memory North Bridge initialization is started
16	Pre-Memory North Bridge initialization (North Bridge module specific)
17	Pre-Memory North Bridge initialization (North Bridge module specific)
18	Pre-Memory North Bridge initialization (North Bridge module specific)
19	Pre-memory South Bridge initialization is started
1A	Pre-memory South Bridge initialization (South Bridge module specific)
1B	Pre-memory South Bridge initialization (South Bridge module specific)
1C	Pre-memory South Bridge initialization (South Bridge module specific)
1D-2A	OEM pre-memory initialization codes
2B	Memory initialization. Serial Presence Detect (SPD) data reading
2C	Memory initialization. Memory presence detection
2D	Memory initialization. Programming memory timing information
2E	Memory initialization. Configuring memory
2F	Memory initialization (other).
30	Reserved for ASL (see ASL Status Codes section below)
31	Memory Installed
32	CPU post-memory initialization is started
33	CPU post-memory initialization. Cache initialization
34	CPU post-memory initialization. Application Processor(s) (AP) initialization

35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
36	CPU post-memory initialization. System Management Mode (SMM) initialization
37	Post-Memory North Bridge initialization is started
38	Post-Memory North Bridge initialization (North Bridge module specific)
39	Post-Memory North Bridge initialization (North Bridge module specific)
3A	Post-Memory North Bridge initialization (North Bridge module specific)
3B	Post-Memory South Bridge initialization is started
3C	Post-Memory South Bridge initialization (South Bridge module specific)
3D	Post-Memory South Bridge initialization (South Bridge module specific)
3E	Post-Memory South Bridge initialization (South Bridge module specific)
3F-4E	OEM post memory initialization codes
4F	DXE IPL is started
50	Memory initialization error. Invalid memory type or incompatible memory speed
51	Memory initialization error. SPD reading has failed
52	Memory initialization error. Invalid memory size or memory modules do not match.
53	Memory initialization error. No usable memory detected
54	Unspecified memory initialization error.
55	Memory not installed
56	Invalid CPU type or Speed
57	CPU mismatch
58	CPU self test failed or possible CPU cache error
59	CPU micro-code is not found or micro-code update is failed
5A	Internal CPU error
5B	reset PPI is not available
5C-5F	Reserved for future AMI error codes
E0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)
E1	S3 Boot Script execution
E2	Video repost
E3	OS S3 wake vector call
E4-E7	Reserved for future AMI progress codes
E0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)
E8	S3 Resume Failed in PEI
E9	S3 Resume PPI not Found
EA	S3 Resume Boot Script Error
EB	S3 OS Wake Error
EC-EF	Reserved for future AMI error codes
F0	Recovery condition triggered by firmware (Auto recovery)
F1	Recovery condition triggered by user (Forced recovery)
F2	Recovery process started
F3	Recovery firmware image is found
F4	Recovery firmware image is loaded
F5-F7	Reserved for future AMI progress codes
F0	Recovery condition triggered by firmware (Auto recovery)
F1	Recovery condition triggered by user (Forced recovery)
F2	Recovery process started
F3	Recovery firmware image is found
F4	Recovery firmware image is loaded
F5-F7	Reserved for future AMI progress codes
F8	Recovery PPI is not available
F9	Recovery capsule is not found
FA	Invalid recovery capsule

FB-FF	Reserved for future AMI error codes
1	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
7	Reset PPI is not available
4	Recovery failed
4	S3 Resume failed
60	DXE Core is started
61	NVRAM initialization
62	Installation of the South Bridge Runtime Services
63	CPU DXE initialization is started
64	CPU DXE initialization (CPU module specific)
65	CPU DXE initialization (CPU module specific)
66	CPU DXE initialization (CPU module specific)
67	CPU DXE initialization (CPU module specific)
68	PCI host bridge initialization
69	North Bridge DXE initialization is started
6A	North Bridge DXE SMM initialization is started
6B	North Bridge DXE initialization (North Bridge module specific)
6C	North Bridge DXE initialization (North Bridge module specific)
6D	North Bridge DXE initialization (North Bridge module specific)
6E	North Bridge DXE initialization (North Bridge module specific)
6F	North Bridge DXE initialization (North Bridge module specific)
70	South Bridge DXE initialization is started
71	South Bridge DXE SMM initialization is started
72	South Bridge devices initialization
73	South Bridge DXE Initialization (South Bridge module specific)
74	South Bridge DXE Initialization (South Bridge module specific)
75	South Bridge DXE Initialization (South Bridge module specific)
76	South Bridge DXE Initialization (South Bridge module specific)
77	South Bridge DXE Initialization (South Bridge module specific)
78	ACPI module initialization
79	CSM initialization
7A-7F	Reserved for future AMI DXE codes
80-8F	OEM DXE initialization codes
90	Boot Device Selection (BDS) phase is started
91	Driver connecting is started
92	PCI Bus initialization is started
93	PCI Bus Hot Plug Controller Initialization
94	PCI Bus Enumeration
95	PCI Bus Request Resources
96	PCI Bus Assign Resources
97	Console Output devices connect
98	Console input devices connect
99	Super IO Initialization
9A	USB initialization is started
9B	USB Reset
9C	USB Detect
9D	USB Enable

9E-9F	Reserved for future AMI codes
A0	IDE initialization is started
A1	IDE Reset
A2	IDE Detect
A3	IDE Enable
A4	SCSI initialization is started
A5	SCSI Reset
A6	SCSI Detect
A7	SCSI Enable
A8	Setup Verifying Password
A9	Start of Setup
AA	Reserved for ASL (see ASL Status Codes section below)
AB	Setup Input Wait
AC	Reserved for ASL (see ASL Status Codes section below)
AD	Ready To Boot event
AE	Legacy Boot event
AF	Exit Boot Services event
B0	Runtime Set Virtual Address MAP Begin
B1	Runtime Set Virtual Address MAP End
B2	Legacy Option ROM Initialization
B3	System Reset
B4	USB hot plug
B5	PCI bus hot plug
B6	Clean-up of NVRAM
B7	Configuration Reset (reset of NVRAM settings)
B8-BF	Reserved for future AMI codes
C0-CF	OEM BDS initialization codes
D0	CPU initialization error
D1	North Bridge initialization error
D2	South Bridge initialization error
D3	Some of the Architectural Protocols are not available
D4	PCI resource allocation error. Out of Resources
D5	No Space for Legacy Option ROM
D6	No Console Output Devices are found
D7	No Console Input Devices are found
D8	Invalid password
D9	Error loading Boot Option (LoadImage returned error)
DA	Boot Option is failed (StartImage returned error)
DB	Flash update is failed
DC	Reset protocol is not available
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
1	Invalid password
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met
01	System is entering S1 sleep state
02	System is entering S2 sleep state
03	System is entering S3 sleep state
04	System is entering S4 sleep state